The Chemical Age

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Food Storage

IN making a country ready to meet the possibility of war, however remote that possibility may be, means of strengthening all vulnerable points in the national armour must be investigated. As we rely to a large extent for our food on overseas supplies, we might easily be subjected to the effects of a blockade in a future emergency with the most serious consequences. Methods of ensuring an adequate supply of food which can be effective in face of blockade are therefore of vital importance. The only available methods capable of practical application are first, increasing the home production of food, and second, setting up some form of food storage sufficient to tide the country over a period of blockade. Home production has increased within recent years; for example, the output of beet sugar has grown and wheat production has increased by fifty per cent. over the past six years. On the other hand, returns of the Ministry of Agriculture show that the actual area of arable land devoted to crops in general has, in fact, decreased, with a corresponding rise in permanent grass. There is, then, scope for expanding the home production of agricultural commodities, but even with the maximum possible output, national requirements could not be met indefinitely. There remains the other method, food storage.

The establishment of the Food Defence Plans Department slightly more than a year ago was the first definite move towards tackling the problem. According to Sir Thomas Inskip, Minister for Co-ordination of Defence, in the House recently, since the creation of the department a complete survey had been made of the stores of food in this country, of the circumstances in which they might be purchased, the places where they might be stored, and the capital expenditure involved. A full report of this very necessary information will be published shortly. The recent debate in the House was enlightening. In increasing food storage, it has been suggested that storage depots of grain and agricultural produce, animal and vegetable oils, and similar relatively non-perishable goods should be set up at strategic points in the country. Supporters of the scheme give various capacities for the proposed stores, but that they should hold sufficient for one year's supply is a fairly general opinion.

The expenditure incurred by such a scheme must obviously be extremely difficult to estimate. There is the cost of building the storage depot and the cost of the stored materials. In the case of wheat alone, Sir Thomas said that to store one year's supply of the grain, a capital outlay in the neighbourhood of thirty million pounds would be involved. On this basis, the cost of a year's supply of foodstuff would be immense. Another difficulty in the way of providing the storage would be the effect of the Government's purchase of the necessary materials. At the present time the country's steel output is little in advance of the demands of industry and the heavy requirements made by the rearmament programme. It is evident that the additional demand provided by the erection of storage silos, tanks, etc., on such a scale as to be sufficient for the storing of one year's food supply could not be met unless the demands of industry and rearmament were allowed to go unsatisfied. Further, purchase of foodstuffs by the Government in such enormous quantities would obviously send prices rocketing.

From the above considerations it would seem that any storage of food for a long period would be out of the question, but that the gradual accumulation of stocks for an emergency only would be more feasible. These are the lines upon which the Government are working and in Sir Thomas Inskip's words " with the assistance of those engaged in the industry." No further details were given of the Government's plans, which must obviously remain secret owing to their very motive.

These conditions emphasise the value of supplementing, as far as is possible, these emergency steps by increased home production has already been pointed out that although the output of home-grown crops has increased in many cases, the total area of land under cultivation has decreased. The larger the home production of food, the less will have to be stored, even for emergency purposes. Further, an advantage of home food production is that it occurs throughout the whole country and difficulties of distribution are almost solved before they occur.

The inference is that agriculture in this country should be encouraged even more than it is at present, by increased Government grants and subsidies. Professor Stapledon recently drew attention to the large area of permanent grassland and said that a big proportion of it could be broken up and a scheme of grass-arable rotation adopted, which had proved so successful in Norway over a long period of years. It only needs sufficient incentive from the Government for the work to be done. We have seen, for example, in the lime and slag subsidy, that the Government is sensitive to the needs of agriculture, and it does seem that here is a very real opportunity for the industry's expansion. Although the need for emergency stores of food supplies would not be eliminated by a great increase in home production, the size of store would be very substantially reduced. Money otherwise locked up in silos, tanks and bins, could be most usefully spent furthering the interests of agriculture.

Notes and Comments

The British Industries Fair

ONCE again the British Industries Fair, which opened at Olympia and Earls Court, London, and at Castle Bromwich, Birmingham, on Monday, is bigger than ever. Almost every year since its inception in 1910 has seen a growth not only in exhibiting space but, more significantly, in the importance which is attached to it as the shop window of the Empire. This is shown by the number of foreign buyers, both British and foreign, who visit the Fair and take a keen interest in the quality of the goods displayed. This year, buyers from 70 countries are attending, the attendance on the opening day being substantially higher than that of last year. The Fair has proved itself to be of definite value to industry as a whole in the amount of business done; the ever-growing space devoted to exhibits is testimony of this. Unlike most of the exhibits at Olympia, which cater for the retail trade, the very nature of the products shown in the chemical section makes the placing of big orders during the actual course of the show an unusual occurrence. It is in the inquiries made at the Fair, which can be followed up subsequently, that the greatest value of exhibiting in the section lies.

Motor Spirit Preference and Cost of Benzene

A LETTER from Dr. H. Levinstein published in the *Daily Telegraph and Morning Post* on the Falmouth oil from coal report, draws attention to several important aspects of the subject. Among these he points out that the 51 million gallons of motor spirit produced by the gas and coke-oven industries in 1936 was for the most part benzene and toluene which are fundamental raw materials in the dyestuffs industry. Benzene is also a raw material of increasing importance to the plastics industry. The effect of an additional 4d. preference on motor spirit, as recommended in the Falmouth report, would, in the absence of any further action, lead to an additional 4d. in the cost of benzene and toluene to industry. In Dr. Levinstein's opinion, it is of the utmost importance that the export trade for dyestuffs, and the requirements of the plastics industry, should not be prejudiced by our very proper desire to ensure in some measure the home production of motor fuel. He urges that suitable action be taken to free these industries from the additional cost of their raw materials.

The Institution of Chemical Engineers

A FULL and enjoyable day was provided by the annual meeting and dinner of the Institution of Chemical Engineers on Friday of last week. The functions, which were very well-attended, opened in the morning with the business of the annual meeting, after which Dr. Cullen delivered a most interesting presidential address. After an informal luncheon, Dr. H. J. Bush read a stimulating paper on "Some Applications of Electrical Precipitation to Industrial Effluent Bases." It is intended to publish an abstract of this paper in next week's issue.) The day was brought to a close by the Institution's annual dinner, which was to a certain extent characterised by the refusal of the various speakers to touch upon any aspect of chemical engineering. To many who must have begun to feel almost surfeited with the subject, this was doubtless a welcome relief. The presidential address contained much food for thought. Among the interesting points on which Dr. Cullen commented was the fact that technically-trained men in this country do not yet attain a large number of high administrative positions. He often wondered whether the right men were in the key positions in the teaching of chemistry. He pointed out that the Institution is now co-operating intimately with sister engineering bodies and it is intended that this bond should be made more close in the future. Dr. Cullen made a plea to industrialists to afford the young undergraduate in chemical engineering a chance to acquire practical works experience during the course of his curriculum. It is obligatory for mechanical and electrical engineers to have this experience before they sit for their degree and he considered that there were no unsurmountable difficulties in the way of arranging a similar scheme for the budding chemical engineer. At present the chemist can, on his own initiative, often obtain experience in an industrial laboratory during his vacation. It is not a long step from the laboratory to the works.

A New Institution

FEW will deny that the position of the works manager is one of the most responsible in the chemical industry but, although his importance to the works of which he is manager is constantly being brought to notice in the routine life of the factory, in the wider sphere of the industry as a whole, the works manager, taken as an individual or as a class, has probably not received that full recognition of his services which he so richly deserves. As announced on another page, a new institution, the Institution of Works Managers, is now being formed with the primary object of raising the works manager's status and prestige; in short, seeking that wider recognition. Candidates for admission must, of course, have had practical experience of works management, coupled as a rule with technical training obtained through some regular course of study. There will be no entrance examination to the Institution itself. It is interesting to know as a result of tentative inquiries that many works managers have already expressed their support to the scheme.

Chemical Trade in Brazil

THE total external trade of Brazil during 1936 was 8.56 per cent. greater in volume and 14.38 per cent. higher in value than that of the previous year, according to a report on the economic and commercial conditions in Brazil, dated October 15 last, issued by H.M. Stationery Office. The tonnage of exports is the highest ever recorded and their sterling value is the greatest since 1930. Imports show an increase of 5.64 per cent. and 9.6 per cent. in volume and value respectively, imports of chemical products, drugs and pharmaceutical specialities rising from 36,903 tons in the first six months of 1936 to 51,484 tons in the same period of 1937. There are a large number of chemical and pharmaceutical factories in Brazil, most of which have been installed within the last few years. Labour and other manufacturing costs are comparatively cheap, with the result that certain locally-produced industrial chemicals compete very successfully with the foreign article. The shipping of a highly concentrated chloride of lime, the saving in freight and duties making it competitive with the local product, resulted in an increase of duty on the product as from December 10 last. The Sao Paulo State Government is authorised to grant financial assistance to any company installing a plant for the manufacture of sulphuric acid from the local pyrites, but so far as is known no foreign firm appears to have shown any interest in the scheme.

The Institution of Chemical Engineers

Presentation of Medals—Annual Meeting and Dinner

THE sixteenth annual corporate meeting of the Institution of Chemical Engineers was held at the Hotel Victoria, Northumberland Avenue, W.C.2, on February 18 with the president, DR. WILLIAM CULLEN, in the chair. The following officers and members of Council were elected :—President, Dr. William Cullen; vice-presidents, Professor S. G. M. Ure and Mr. L. O. Newton; honorary secretaries, Dr. A. J. V. Underwood and Mr. M. B. Donald; honorary treasurer, Mr. F. A. Greene; members of Council, Captain W. H. Cadman, Dr. A. Parker, and Mr. A. V. Potter; associate member of Council, Mr. J. C. Swallow. Presentation of the Osborne Reynolds, Moulton, Junior Moulton, and William Macnab medals was then made by the president.

The Moulton medal, presented each year in commemoration of the chemical engineering work of the late Lord Moulton at the Department of Explosives Supply, was awarded to MR. M. B. DONALD, M.Sc., A.R.C.S., F.I.C., lecturer in chemical engineering at University College, London, for a notable scientific paper on "Percolation Leaching in Theory and Practice." The Osborne Reynolds medal in commemoration of Osborne Reynolds, famous physicist and engineer of the last century, was presented to MR. C. S. GARLAND, B.Sc., A.R.C.S., F.I.C., for "his unceasing interest in the advancement of the Institution's affairs." The Junior Moulton medal award went to MR. W. H. A. WEBB, B.Sc., a graduate member of the institution, for a paper on "Industrial Alcohol," and the William Macnab medal was awarded to MR. M. J. VAN DER ZIJDEN, of Amsterdam, for "the best set of examination papers in the associate-membership examination."

Mr. M. B. Donald, who has been awarded the Moulton medal.

At the conclusion of the meeting, Dr. Cullen delivered his presidential address, entitled "A Milestone," extracts from which are given below

"A Milestone"—Dr. William Cullen's Presidential Address

LAST October the University of London inaugurated a graduate course in chemical engineering which is now in force at various of its constituent colleges. This happy consummation is due in great measure to the untiring efforts of some of those—happily still with us—who were responsible for the inauguration of the "Institution" itself. The action of the University of London in inaugurating the course is, to my mind, a recognition of the fact that chemical engineering is not only a definite branch of applied science, but likewise a definite profession, which holds out great and ever-increasing opportunities to the undergraduate; and in this connection I am glad to notice that the number of student and graduate members elected this year has surpassed all previous records.

One advantage of having chosen such a title for my address as the present is that one can look back as well as forward. In Vol. I (p. 7) of our proceeding is given "The History of the Formation of the Institution of Chemical Engineers," wherein it is recorded that the inaugural meeting and dinner took place on May 2, 1922, when the following provisional Council—authorised to sign the necessary legal documents — was elected, viz.: Sir Arthur Duckham, K.C.B., M.Inst.C.E.; C. S. Garland, A.R.C.S., B.Sc., F.I.C.; Prof. J. W. Hinchley, Wh.Sc., A.R.S.M., F.I.C.; J. Arthur Reavell, M.I.Mech.E.; F. H. Rogers, M.I.Mech.E.; H. Talbot, B.Sc., A.R.C.S.; and Wm. Macnab, F.I.C. "The Institution" was formally incorporated on December 21, 1922, and the first meeting of the Provisional Council was held on Wednesday, January 10, 1923. At this meeting it was agreed unanimously that Sir Arthur Duckham be elected the first President of the Institution. Mr. K. B. Quinan and Dr. Charles Carpenter were unanimously nominated vice-presidents, Mr. F. H. Rogers honorary treasurer, and Prof. J. W. Hinchley honorary secretary."

Dr. William Cullen, President of the Institution of Chemical Engineers.

This is all I propose to say about these early days, but I do suggest that the excellent record is quite incomplete as it stands. Fifty years hence the historian may ask, "But who were these founders?" Before it is too late, therefore, I should like to have the records of all our pioneers placed among our archives, and I promise that this will be done.

Another reason for considering this particular year a milestone is the fact that before we shall meet again in a corporate capacity we shall have attained a membership of one thousand, unless all the portents are wrong. And in this connection, I am not one of those who think that in the future we shall have a large membership. We could have it if we lowered our standards, but I am happy to say that on this point we are all adamant. It may be of interest to the British Institution of Chemical Engineers to know that the demand for well-trained men in chemical engineering by the chemical industries of the United States is greater than the number which the technical schools and universities are turning out at the present time. Personnel officers of the large chemical companies have already started to interview chemical engineering students who will graduate in June, 1938, for employment after that date. I need hardly say that, although things

are improving in this country, as I have already indicated, so far as numbers are concerned at any rate, the attitude of employers, *vis-a-vis* the chemical engineer, is in sharp contrast to that in the U.S.A. Again, whereas in the U.S.A. and in Germany the numbers of technically trained men who attained to high administrative positions are legion, here the position is not yet so favourable. The consideration of this subject would lead me too far afield, but, viewed broadly, one sometimes wonders whether, so far as the teaching of applied or even pure chemistry is concerned, the right men are in the key positions.

Interchange of Information

Still another reason for looking upon this year as a milestone is the fact that we are for the first time co-operating intimately with those sister qualifying engineering institutions which are known not only throughout our Empire, but throughout the world. In the past our affiliations and contacts have been mainly chemical or physico-chemical. In the future, though we have no idea of abandoning old friendships and affiliations, we have definitely decided to link ourselves more intimately with engineers, and I personally would like to take this opportunity of thanking the presidents of the Institution of Civil Engineers, the Institution of Mechanical Engineers, and the Institution of Electrical Engineers for their kind reception to the advances which I made to them and to their Institutions on your behalf.

I would now like to make a few general observations with regard to chemical engineering in the light of my own experience, which extends over a good many years. As my technical record is known to most of you, I need only say that for the greater part of my life I have been mainly associated with the explosives industry and to a lesser extent with the mining, metallurgical, and oil industries. There are two points connected with the oil and metallurgical industries—both essentially branches of chemical engineering—which have always struck me as noteworthy. The first is the immense tonnages which they deal, and the other is the unreserved manner in which they exchange technical and scientific information.

With regard to the interchange of scientific and technical information, the difference between them and the chemical industry, whether of this country or of any other country, is most striking. Whereas in the case of the former there is no reserve which I have been able to discover, in the case of the latter there is in my opinion far too much, and for this state of affairs the large companies must shoulder a great part of the blame. It is through the dissemination of information that progress in the large sense is made. Is there any valid reason why after the lapse of five years the details of the working of a patented process should not be published, more particularly as most products to-day are cartellised or controlled in some way or other?

Obsolescence and Taxation

The problem of obsolescence has become of increasing importance and is probably a more serious matter to the chemical industry than to any other, for nothing is static; everything and every process is undergoing change, and some of these changes are so rapid as to be almost bewildering. One wonders where it is all going to end; but progress cannot be stopped and, though some of these advances have been put to the basest of uses and though we all lead more strenuous lives, we are on the whole more comfortable. One thing, however, is very certain and it is this: that our unemployment figures would be very much worse than they are if it were not for these continual advances, which in their turn mean obsolescence and replacement. In this connection I sometimes wonder whether the Inland Revenue authorities really allow sufficient for this in their assessments. All chemical engineers should give consideration to obsolescence and taxation problems if they wish to get on, for to-day they are very much to the fore.

It is generally recognised that reserves of some of our metals are getting woefully short. No less an authority than Sir Thomas Holland has estimated that since the beginning of this century more metals have been consumed than in all the previous history of the world. This, of course, is a pure guess but I should think that the guess is very near the truth. The known reserves of lead are small: nickel in quantity only occurs in one or two spots; even iron is not too plentiful. Looking ahead, therefore, the chemical engineer and the metallurgist, who have already achieved so much in collaboration, may have some interesting problems to solve in the not too distant future.

The present generation hardly realises the great changes which have taken place in industry during the post-war period. Units have become larger and ever larger, and one sometimes wonders when the process is going to stop. One result of the consolidation of interests into these large units, to which I have just referred and which, though apparently inevitable, I deplore, is the gradual elimination of the independent consultant. I am a whole-hearted believer in competition, and it is the practical elimination of competition which has made the future of the independent consultant—and I use the term "independent" advisedly—so precarious. We are all getting very nationalistic these days, but I am hoping that self-sufficiency, bad as it is, will help us to attract new industries to this old country of ours, and thereby perpetuate the existence of consultants who have done so much for industry in the past.

Industry to-day, apart altogether from legislative enactments, is more conscious of its obligations to its servants and to the community at large than at any other time in its history. I therefore appeal to those leaders in our industries, and more particularly its technical leaders, to give our young undergraduates a chance of acquiring some practical experience during the course of their curriculum. I know perfectly well that industry, if it responded to this appeal, would be assuming a liability, and even a greater one if the undergraduates were paid a modest competence during this period. But even this is not new; indeed, it is quite common practice nowadays. The mechanical and electrical engineers must perforce have some practical works experience before they take their degree, and the necessary arrangements are easily made. The chemical engineer, if he is to be any good at all, must of necessity be placed on an equal footing, and where else can he get the necessary experience but in a chemical works?

"Refresher" Courses of Study

I have already referred to the great changes which are taking place in our particular world and their rapidity. These create many problems—financial, sociological, and human—the importance of which we are just beginning to realise and, to a certain extent, study, but their consideration to-day is not possible. There is, however, one aspect of this matter which I suggest is worth considering. Keen young men with every desire to keep abreast of new developments find it almost impossible to do so to-day. I suggest, therefore, in all seriousness that it would be a good thing in the long run for companies if they adopted the general idea of the academic Sabbatical year, making it applicable to a selected few of the keen young men. What I mean specifically is that after five or six years in the works of research laboratories, selected men should be allowed to go back to the university for a "refresher course," not necessarily to attend [illegible] courses of lectures, but simply to brow[illegible] at first hand what is going on.

And now I shall conclude with one or two general observations which are applicable not only to our Institution, but to many others. All are agreed to-day that the publications of scientific material by scientific and technical societies are amongst the most valuable tools of industry, if not the most valuable. But the extraordinary aspect of this matter is that with few exceptions the cost of these publications is borne entirely by technical men themselves, who, as a rule, are not too well [illegible]

In addition to being a qualifying body, we publish Transactions in great detail, and the cost of printing absorbs a very

large percentage of our total revenue. I propose, therefore, to appeal to " industry " to lighten this burden, for during the past 15 years we have been able to save very little for a rainy day and we have no endowments of any kind.

When I was a young man the technical leaders in the chemical industry took an active part in the affairs of technical societies. The large industrial units to-day are on the whole not well represented either at our own meetings or at those of other chemical societies with which I am connected; nor are they very much in evidence in the administration of these institutions. I can assure all my absentee friends that they miss a great deal by keeping away. I know only too well that it is not easy for many to attend meetings and conferences, but if those in authority could let it be made known that they are not only sympathetic, but ready to make things easy, all parties would benefit in the long run.

The Annual Dinner

DR. CULLEN presided over the sixteenth annual dinner of the Institution, held in the King Edward VII Rooms of the Hotel Victoria on February 18.

SIR HAL COLEBATCH, Agent-General for Western Australia, proposing the toast of " The Institution of Chemical Engineers," said that the influence of knowledge could be either beneficial or malignant, and, in cases where it could be both, it was a question which of the two predominated. It was doubtful whether the wisdom of mankind had made equal strides with the amount of knowledge acquired, and in climbing up the stairs of progress so rapidly there was a danger of losing our steps. He was not one of those pessimists who think that chemical engineering has done as much harm as good, he was at one with those who have confidence in the future. This confidence rests on youths—young people and young countries. Australia has to face the great problem, shared by Great Britain, of the clouds overhanging Europe at the present time. The time was fast approaching, continued Sir Hal, when the fullest possible use will have to be made of all land. At the time of depression in this country nothing helped more than the fact that materials flowed in from the colonies at a price that people could pay, to maintain industry and the standard of living.

Australia could carry at least four times its present population, and to-day the country realises the necessity for increasing its numbers, especially from Great Britain. Among the 1½ millions unemployed in this country, comparatively few were suitable to go; it was to youth that we must look, and make sure that they are afforded the best opportunities. The speaker said that one of the factors which contributed largely to the recovery of Australia from the depression was the enormous increase in the output of gold.

THE PRESIDENT, in reply, said that there was one point from Sir Hal Colebatch's speech upon which he would like to comment. Sir Hal was quite right in saying that chemical engineers were a very fine body of people, but with one or two notable exceptions, the chemist and chemical engineer had failed to translate their knowledge into terms the man in the street could appreciate. This state of affairs should be remedied as soon as possible. Dr. Cullen paid tributes to Mr. J. Watson Napier, the first graduate in chemical engineering in this country and the institution's youngest member; to Mr. M. B. Donald, one of the institution's two honorary secretaries, for winning the Moulton medal; to Mr. C. S. Garland for winning the Osborne Reynolds medal; and to the Dutch recipient of the William Macnab medal.

MR. C. S. GARLAND proposed the toast of " The Guests," to which SIR ROBERT PICKARD, Vice-Chancellor of the University of London, and MR. ROBERTSON F. GIBB replied. DR. CULLEN responded to the toast of the president, proposed by MR. J. ARTHUR REAVELL.

Among those present were: Mr. Horatio Ballantyne, Mr. W. R. Barclay, Mr. Victor Bartram, Captain J. G. Bennett, Dr. and Mrs. S. C. Bradford, Mr. and Mrs. G. W. J. Bradley, Dr. W. T. K. Braunholtz, Mr. and Mrs. M. W. Burt, Mr. W. A. S. Calder, Mr. C. Augustus Carlow, Mr. and Mrs. Francis Carnegie, Mr. Eric N. Davis, Professor F. G. Donnan, Mr. and Mrs. A. A. Drummond, Mr. E. V. Evans, Dr. and Mrs. J. Vargas Eyre, Mr. and Mrs. Robertson F. Gibb, Mr. and Mrs. F. A. Greene, Dr. W. R. Halliday, Sir Harold and Lady Hartley, Mr. and Mrs. H. P. Hill, Mr. and Mrs. T. Hornbuckle, Dr. and Mrs. L. A. Jordan, Dr. and Mrs. L. H. Lampitt, Mr. H. Lindars, Dr. M. F. Lindley, Mr. C. and Lady Longhurst, Mr. Wm. Macnab, Mr. and Mrs. Emile Mond, Mr. J. H. G. Monypenny, Sir Gilbert and Lady Morgan, Mr. J. W. Napier, Mr. and Mrs. J. Watson Napier, Mr. W. Palmer, Mr. and Mrs. G. Patchin, Dr. S. J. and Lady Pigott, Mr. J. Davidson Pratt, Mr. and Mrs. Stanley Robson, Mr. J. F. Ronca, Mr. and Mrs. T. Simpson, Mr. and Mrs. Harold C. Smith, and Mr. and Mrs. H. O. Smith.

The Institution of Works Managers

A New Body in Process of Formation

AN institution, at present in process of formation, will work to raise the status and prestige of the works manager. The provisional Council proposes to limit the membership strictly to gentlemen whose credentials prove both their experience and their capacity.

It is considered that as a rule candidates will be expected to have followed some regular course of technical training. As this will vary widely in different industries the Institution does not propose to set up examinations of its own. In addition, practical experience in works management will be regarded as essential, as only in this way is it possible to learn the psychology of handling workmen.

The need for the Institution has long been evident. The works manager occupies a key position in industry, but his importance has not received proper recognition. In recent years, also, added responsibility has fallen on the shoulders of the works manager from the fact that most types of manufacture are being conducted on a larger scale than formerly.

A preliminary letter has been addressed to the works managers of many of the most important firms in England, Scotland, Wales and Northern Ireland, and has met with a very encouraging response. While in the main members will be in control of the larger units in industry, the Institution will give an equal welcome to the managers of small works if their personal qualifications are suitable.

It is proposed that the headquarters of the Institution shall be in Manchester, as this city is a convenient centre for the industrial north, and as some of the most active support has come from this area. It is felt that it will be an advantage to keep in very close touch with industry.

Membership will be in two grades, termed the fellowship and the associateship. The rate of subscription has not yet been fixed, but will be kept as low as possible and will probably be two guineas for fellows, and one guinea for associates, with entrance fees of the same amounts. It has been suggested that all those elected before the end of 1938 should rank as foundation members and should be excused entrance fees. Fellows will have the right to use the initials F.I.W.M., and associates those of A.I.W.M.

Works managers and assistant works managers who are interested should communicate with the acting secretary, L. M. Angus-Butterworth, F.C.I.S., A.M.I.Mech.E., Ashton New Hall, Ashton-on-Mersey, Cheshire. Technical directors in charge of works will be eligible for membership.

Letters to the Editor

Alleged Disclosure of Secrets

SIR,—With reference to the judgment in the action brought by British Industrial Plastics, Ltd., against Ferguson and others, I notice in THE CHEMICAL AGE, February 19, that there are some inaccuracies in your report, and one or two matters where the meaning is not quite clear.

In the first paragraph, you say that the action was brought against certain persons and Mr. J. E. Ferguson, of Marloes Road, London, W.8, and Mr. F. A. Ferguson, managing director of Messrs. Ferguson. There is, however, no such person as Mr. F. A. Ferguson, and the managing director of Messrs. Ferguson is Mr. J. E. Ferguson.

Further down in the report, you say that the defence was that there was no reason to patent the process, as it was common knowledge, and that the whole of the subject matter was common knowledge. The defence, however, was a complete denial of all the allegations, and, in particular, it was pleaded by Ferguson's that Mr. Doherty had brought to us a process of which he claimed, and which we believed, he was the true and first inventor, and this process was, in fact, accepted by the Comptroller of the Patent Office as novel and patentable.

It should further have been made clear that Mr. Doherty left our employment in May, 1936, and that the award of damages was against him alone.—Yours faithfully,

For JAMES FERGUSON AND SONS, LTD.
J. E. FERGUSON,
Managing Director.

The Fischer-Tropsch Process

Review of Work on the Production of Oils

MR. ARTHUR GROUNDS, B.Sc., A.M.I.Min.E., F.Inst.F., in a recent lecture at the Rotherham College of Technology dealt with the gradual development of the synthesis of liquid fuels from the early discoveries of Sabatier in 1902 and showed how Fischer and Tropsch, working together since 1922-23, first established that in the presence of an alkaline iron catalyst at 400° C., and at a pressure of 100 atmospheres, alcohols, aldehydes, ketones, and fatty acids could be produced.

In all 17 different compounds were isolated in this early work, and the mixture of these compounds was called Synthol. Together with Zerbe, Fischer found that as lower pressures were used, compounds containing less oxygen were formed, and that the rate of the reaction fell off. Eventually, it was found that at seven atmospheres pressure, an oil was produced consisting principally of hydrocarbons of a paraffinoid nature. In 1905, Fischer and Tropsch found that the reaction could be carried on at atmospheric pressure, and they also discovered that if the catalyst was to have a long life it would be necessary to work at temperature between 200 and 300° C. With a reduction in temperature the reaction was slowed down to a still further extent, so that new and more highly active catalysts had to be found.

Tropsch left Fischer in 1928 to found the new Institute for Coal Research at Prague, and it took Fischer and his co-workers (Koch and Meyer) six years to produce catalysts which were sufficiently active at 200° C., and at atmospheric pressure, and which yet had a reasonably long life. Actually, during the course of these tests, which extended over six years, thousands of materials were tested out to obtain the most suitable catalyst. It was found that the presence of a strong alkali brought about polymerisation, until eventually solid paraffin was obtained as an end product, instead of liquid oils. Eventually a cobalt-thorium catalyst was produced, which was found not only to give high yields of liquid products, but which also had a long life in actual practice.

The theoretical yield of liquid products was actually 185 grams per cu.m. of gas, containing 29.5 per cent. of carbon monoxide and 60 per cent. hydrogen, and the latest reports showed that 151 grams per cu.m. could be obtained corresponding to a conversion of 81.6 per cent. of the total material. This result was brought about with the use of a 2-stage operation at 190° C. and 184° C. respectively, using a cobalt-copper-thorium-Kieselguhr catalyst.

One of the essentials for the satisfactory operation of the Fischer-Tropsch synthesis was the purification of the synthesis gas from organic sulphur compounds. A method had been elaborated by Fischer and his collaborator Roelen, which was found to be perfectly satisfactory in industrial practice, and which was capable of reducing the organic sulphur in the gas to the abnormally low figure of 0.2 grams per 100 cu.m. or 0.087 grains per 100 cu. ft.

The synthesis of liquid products from a mixture of carbon monoxide and hydrogen, was an exothermic reaction, and the heat generated was so great that it was sufficient to raise the temperature of the gases several hundred degrees. This heat had to be dissipated, since the reaction only took place at about 200° C., and in order to do this, the conversion vessels were surrounded by a circulating oil system, so that the oil picked up the heat evolved and transmitted it to water for the generation of steam in a special type of boiler. The products formed by the synthesis were water white, and before use they only needed to be freed from traces of organic acids, so that all they required was a light soda wash. The products were obviously free from sulphur, in view of the very fine purification of the synthesis gas, and were thus superior to natural products from this point of view.

The remarkable flexibility of the Fischer-Tropsch process from the point of view of the raw material available was stressed, and the yield of finished products from the primary oils obtained was given as: Gasol, 8 per cent. (consisting mainly of butane and propane); petrol, 50 per cent.; diesel oil, 39 per cent.; and soft paraffin wax, 3 per cent. In addition, a hard paraffin wax could be recovered from the catalyst mass when the latter was regenerated, and the production of this wax almost paid for the cost of regeneration of the catalyst.

It was shown how the octane number of the petrol produced could be improved by cracking and by blending with benzol and/or alcohol, together with the addition of lead tetra-ethyl.

Ten Years Back

From "The Chemical Age," February 25, 1928

The European Zinc Cartel is to have its headquarters in Brussels. The output of members will be regulated and markets will be allocated.

* * * *

Exports of chemicals and allied products from the United States attained an aggregate value of $192,000,000 in 1927, an increase of 6 per cent. on the previous year.

* * * *

The third German Artificial Silk Exhibition was held last week at Cologne, the principal participants being members of the German Viscose Convention and the Bemberg concern.

* * * *

Diseases of occupations reported in January under the Factory and Workshop Act, or under the Lead Paint (Protection Against Poisoning) Act, 1926, included three cases of aniline poisoning.

* * * *

A Swedish powder-making expert, Baron C. G. von Otter, head of the Aaker Powder Works in Sweden, has just returned from China. He has been acting as an instructor to introduce modern methods and technical improvements in the powder and explosives factory of Chang-Tso-Lin, one of the biggest plants of its kind in the world, employing 10,000 workmen.

* * * *

Unemployed insured persons at January 23, 1938, in chemical manufacture in Great Britain numbered 5,717 (males 4,921, females 796); in explosives manufacture, 1,088 (males 753, females 335); paint, varnish, japan, red and white lead manufacture, 893 (males 744, females 149); and oil, grease, glue, soap, ink, match, etc., manufacture, 4,945 (males 4,107, females 838). The percentages unemployed in the same industries, in the above order, at the same date, were 6.2, 5.9, 4.9 and 6.5.

The British Industries Fair

Engineering Requirements of the Chemical and Allied Industries

THE Birmingham section of the British Industries Fair, which will remain open at Castle Bromwich until March 4, is an outstanding example of the co-operative effort of the leading heavy industries of the country. Since its inception the exhibiting area has increased from 85,000 sq. ft. to over 300,000 sq. ft. There is a slight decrease in the number of exhibitors this year; in 1937 there were 982 exhibitors occupying 300,600 sq. ft. of flooring space, whereas this year there are only 904 exhibitors with an increased floor space of 303,400 sq. ft. The opening ceremony was presided over by Lord Dudley, who is president of the Birmingham Chamber of Commerce.

As staged at Castle Bromwich, the Fair is more than a mere medium for the disposal and advertisement of manufactures of the United Kingdom. In addition to its increasing importance as a meeting place of buyers and sellers from all parts of the world, the very nature of many of the exhibits make it possible to provide demonstrations under working conditions. As many of the requirements of the chemical engineering industry are covered, this section of the Fair is therefore of interest from the engineering aspect of erecting and operating chemical plant.

This year industrial furnaces are being exhibited upon a larger scale than hitherto; there is an increased variety of types, and also a much wider range of sizes. Heat control has many new degrees of refinement which are reflected in the variety of recording and measuring instruments which are exhibited. The newest phases of boiler house practice are covered by the inclusion of coal pulverising equipment and mechanical stokers. Economies in fuel are shown to be achieved by the installation of equipment for the waste products of combustion. New types of boilers are in evidence. Boiler house units are so exhibited that they may be inspected under normal working conditions.

Of still more direct interest to the chemical industry are boiling pans of large dimensions, manufactured in stainless steel; vertical retorts for the processing of foodstuffs and other products. Pumps for all industrial purposes are being exhibited. There are also moulding presses, which are of special interest in view of the rapid rise of the plastics moulding industry. An increasingly wide application of oxy-acetylene welding is evident from an inspection of any exhibits which are in the nature of tanks, cylinders, and closed vessels. Pipes and tubes appear to occupy a place of growing importance, and the exhibits this year comprise a very large selection of ferrous and non-ferrous types with an increase in the number of sizes which are available for use industrially.

Some Interesting Exhibits at Castle Bromwich

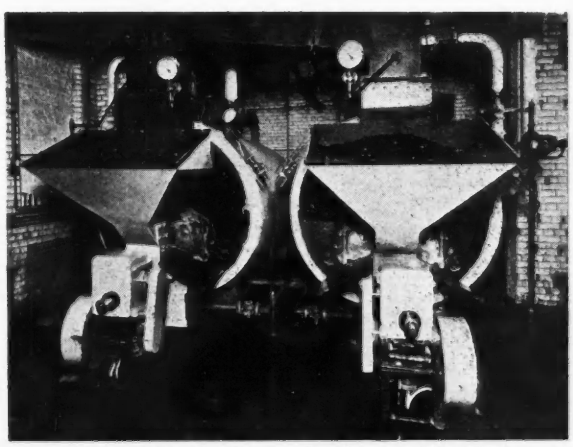
Barronia Metals, Ltd., have for many years placed the services of their research staff at the disposal of the engineering industry and Stand D325 provides examples of metallurgical problems they have solved. The exhibits include the well-known corrosion resisting alloy, Barronia metal, the Berdo range of high duty nickel/lead alloys, and lead and zinc soft metal dies.

The greatest achievements in the metallurgical field of recent years have consisted not so much in the development of new metals in alloy form, but in the transformation of existing alloys by the addition of removal of small quantities of other elements. Of major importance has been the production and application of super purity zinc. By the adaption of the basic chemical principles of liquid purification to a metal whose boiling point exceeds 900° C., a process has been established which will produce zinc of a purity exceeding 99.99 per cent. in commercial quantities. This metal—the purest on the market—is produced by the *Imperial Smelting Corporation, Ltd.,* at their Avonmouth smelter, and is marketed under the registered brand of "Crown Special." The importance of high purity zinc is demonstrated at Stand D621, where illuminated spectrographic plates of "Crown Special," eectrolytic, special purity and G.O.B. zincs can be examined in a viewing box, and the small impurities contained in each is shown by the variation in the thickness of line on the spectrogram.

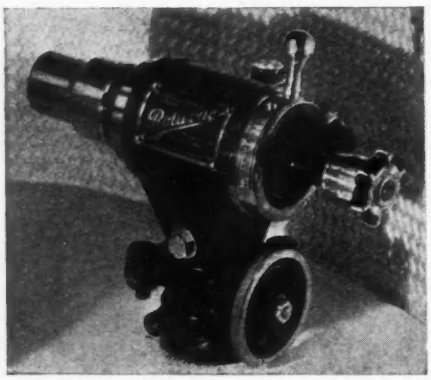
The Northey-Boyce Rotary Engineering Co., Ltd. (Stand D226) are showing the only rotary compressors and vacuum pumps on the market without sliding vanes or valves, and which at the same time have positive compression. These compressors and vacuum pumps have been in production for over three years and are now made in sizes up to 900 c.f.m., single-stage and 700 c.f.m., two-stage types. They are suitable for all applications where reciprocating and rotary (sliding vane type) compressors are used. When run without lubricant, the air may be used direct without oil traps, in such applications as air locks, air-lift pumping where there must be no possibility of taint of oil reaching the product; and in the conveying of pulverised materials in pipes.

The Birmingham Battery and Metal Co., Ltd. (Stands D607 and 506) is constructed from the products of the firm. At the front are representative examples of the company's production of large seamless copper and brass tubes, such as are being supplied for steam pipes and other engineering purposes. In the centre of the stand is exhibited a representative example of a seamless copper tube of 24 in. inside diameter.

On Stands D515 and 413 *W. and T. Avery, Ltd.,* are showing examples of the latest developments in testing machines, industrial weighing equipment, and counting machines. In the former group is the Avery-Brownsdon wear and lubricant tester, designed to show the relative resistance to wear of various metals and the relative efficiencies of lubricants in preventing wear. In this machine a flat metal specimen is held by a known force against a hardened revolving wheel whose periphery is supplied with lubricant. After a certain time interval the specimen is removed and the length of the elliptical impression is measured. If the same metal is used with various lubricants the impressions give relative properties of the lubricants to prevent wear; on the other hand, if various metals are used with the same lubricant the resulting impressions show the relative capabilities of the metals to



Glass silk insulation by Chance Brothers and Co., Ltd., used as boiler lagging.



The Rotavac heavy oil burner being shown by Nu-Way Heating Plants, Ltd.

resist wear. Outstanding by reason of their wide sphere of usefulness are industrial weighing machines which automatically totalise any desired run of weighings and also give the total weight of all loads which have passed over the machine. Of the three self-indicating counting machines exhibited, the unit count machine is the most interesting, because it weighs gross and nett, determines the variation in weight of repetition articles from a master specimen, computes material and scrap and counts the number of units in a bulk quantity.

Glass silk was introduced into this country in 1930 by *Chance Brothers and Co., Ltd.* A new process is being developed in the U.S.A. to produce fibres even thinner than those at present in use and which will enable yarns to be spun of pure glass, which are then woven into cloth, tape, etc. Examples of the latest products are being shown at Stand D329. They include rigid sections for the insulation of pipes, battery separators made of woven cloth; cloth, tapes, yarns and slivers, some of which are of special composition rendering them suitable for the insulation of electrical apparatus; sealed insulation slabs for refrigeration and cold storage; and filtration units for air conditioning apparatus.

Screwed and socketed tubes and fittings, and large steel pipes for water, gas and sewage schemes, with a wide variety of joints suitable for the partcular requirements of such mains are the main feature at Stands D501 and 400 occupied by *Stewarts and Lloyds, Ltd.* There is also a good representation of Johnson couplings and loose flange joints, while a new wriggling model under pressure demonstrates the flexibility of the Victaulic joint. Samples of different protective coatings are shown illustrating the present day practice of protection against corrosion. Modern requirements in steam plant installations provide increased interest in the Dawson joint, of which samples with and without flanges are exhibited. This joint has steadily increased in favour and has now being adopted for steam at 900 lb. pressure and 930° F. and for boiler feed water at 2,300 lb. pressure and 385° F. Its special advantage is that it is an all welded, not merely a seal welded joint. The weld extends through the whole thickness of the pipe itself, and also penetrates into the internal nipple, making a joint as strong and as staunch as the pipes themselves.

This year is the 50th anniversary of the foundation of the *Dunlop Rubber Co., Ltd.*, and the exhibit on Stand D511 reflects 50 years' experience and development in rubber manufacture. There is a comprehensive display of anti-corrosion rubber, protective linings for acid resisting plant and containers, and Nerflex anti-corrosion buckets and jugs.

The exhibit of the *Vacuum Oil Co., Ltd.* (Stand D419) is devoted to the display of a complete range of Gargoyle lubricating oils and greases. In the front of the stand is a working exhibit of the well-known Delvac mechanical lubricator. Over 15,000 of these lubricators are in use at home and abroad, representing some 75,000 feeds.

Gibbons (Dudley), Ltd. (Stand Ca511) are again showing a full range of their well-known refractories, the various types available being sufficiently comprehensive to cover the bulk of industrial requirements. 95 per cent. silica goods are exhibited in the form of bricks, segmental gas retorts and coke oven shapes, the very accurate finish being a noteworthy feature. The "H.T.1" brand refractory insulating brick is prominently displayed in the form of squares and special shapes, proof of the success of this material being shown by the fact that a complete new plant has been put down to cope with the increased demand. Various types of fireclay and aluminous materials are exhibited and also a range of super refractories in silicon carbide, fused alumina and sillimanite.

"Everything for Safety Everywhere" is the keynote of the exhibits of *Siebe, Gorman and Co., Ltd.* (Stand D624), who make gas masks for industrial purposes, self-contained oxygen breathing apparatus ("Proto," "Salvus" and "Fireox" types) for use in irrespirable atmospheres at chemical works, gas works, iron and steel works, etc. Dust masks and respirators for all purposes are being shown, as well as smoke helmets of various patterns, acidproof and waterproof clothing, safety belts, and protective goggles and gloves.

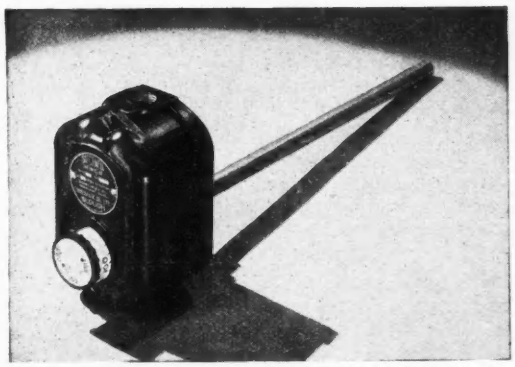
David Moseley and Sons, Ltd. (Stand D630) are exhibiting a very comprehensive range of mechanical rubber and vulcanite products for all industrial purposes, including hose, rollers in soft rubber and in black and white vulcanite, gloves, gauntlets, etc., and mechanical moulded rubber products for use in the chemical industries.

Exhibits by *International Combustion, Ltd.* (Stand D215) include the "Ty-Rock" mechanical screen for the coarse screening of such materials as coal, stone, gypsum, limestone, sand and gravel; the Hardinge constant weight feeder, which is capable of regulating both coarse and fine feeds by weight instead of by volume, and automatically maintains the weight constant no matter how conditions change; the scale working model of the Raymond roller mills complete with an air separation system to ensure a consistently uniform product; and the Vacseal pump for abrasive slurries and pulps.

Oxley Engineering Co., Ltd. (Stand Ca715), specialise in the erection of arc welded purifiers, spiral guided gasholders, and other gas plant, and have also carried out important contracts for the erection of arc welded storage tanks in all parts of the country. In addition to numerous photographs they are showing a model of an arc welded spiral guided gasholder constructed on the "Hollis" patented system. In connection with purifier construction, two "Hollis" patents may be seen, these being a leak detector and fastener and a working model of a "Quick Grip" fastener for low pressure vessels as well as purifiers. Among other exhibits are samples of homogeneous lead coating and asbestos spraying.

The British Oxygen Co., Ltd. (Stands D411 and 312) focuses the interest of oxy-acetylene welding and cutting. By practical demonstrations, visitors have the opportunity of seeing for themselves the advantages of B.O.C. equipment for their particular class of work. At the same time they have the chance of learning about the best method to adopt for the job they have in mind for the processes.

Babcock and Wilcox, Ltd., and subsidiary companies (Stands D401 and 300) have an exhibit of piping, valves and Babcock Class 1 fusion welding, generally the same as last year. New exhibits include a new design of oil burner and three different air registers, together with pressure atomising and steam atomising burners, as well as a dual burner for gas fuel. The air registers are adaptable either for induced or forced draught operation. The pressure atomising type burner atomises oil by pressure only. The dual purpose burners comprise two burner elements in one body; they are constructed with central and annular supply passages as for the steam atomising sprayer, but the central passage is arranged so that the oil is passed through tangential slots into the orifice or nozzle as in the case of the pressure burner.



A new immersion thermostat made by Rheostatic Co., Ltd.

The Calorising Corporation of Great Britain, Ltd. (represented on the Babcock and Wilcox stand) show heat treatment containers for cyanide, salt, lead, case hardening and annealing superheater supports, pyrometer sheaths, baking cradles, furnace component parts, etc., in calorised mild steel and calmet heat resisting alloy.

On Stand D106 *Nu-Way Heating Plants, Ltd.*, are showing the Rotavac burner. It is largely used on fuel oil of 200 seconds viscosity which can generally be purchased at a lower price than lighter oils. As an example of its atomising properties it can be mentioned that it has handled oil up to 1,500 seconds viscosity cold, and has even been used in other spheres for atomisation of chemicals such as sodium silicate. To these atomising properties also must be attributed the fact that furnace atmospheres either reducing, neutral or oxidising can readily be obtained, the burner being shown in operation with a special demonstration combustion chamber designed to show some of its special features. These include a flame length control which can be varied whilst the burner is in operation, while the flame itself is particularly well diffused and gaseous. The burner is shown under thermostatic control, which is arranged by automatic regulation of the air valve alone. A feature also demonstrated is the safety from fire in the event of air supply failure. Another exhibit on this stand is a new coke-fired pipeless heater mainly used for the economical heating of small works where first cost and high efficiencies are demanded.

Johnson, Matthey and Co., Ltd. (Stand Cb211) are exhibiting contact bi-metal, and indicate the variety of forms in which this material is now employed. Of particular interest is a display of precious metal catalysts. The catalytic properties of platinum, and other precious metals and alloys, are receiving constant and increasing attention, and a display has therefore been arranged to indicate some of the types of catalyst now employed, and possible adaptations for other purposes. There is also a display of platinum laboratory ware devoted to micro-apparatus.

A complete range of pyrometer indicating and recording apparatus is to be seen on Stand D320 occupied by the Industrial Research Laboratories of the *City of Birmingham Gas Department.*

Mild steel and stainless steel tubes in close joint, open joint and welded qualities, bent and straight, are exhibited by the *Britannia Tube Co., Ltd.* (Stands D611 and 510). Mild steel tubes cased with brass, aluminium and stainless steel, angles, channels and sections in mild steel and stainless steel, seamless aluminium tubes, atomic hydrogen welded tubes in stainless and heat resisting steels for use as heating and cooling coils, pyrometer sheaths, etc., are also being shown.

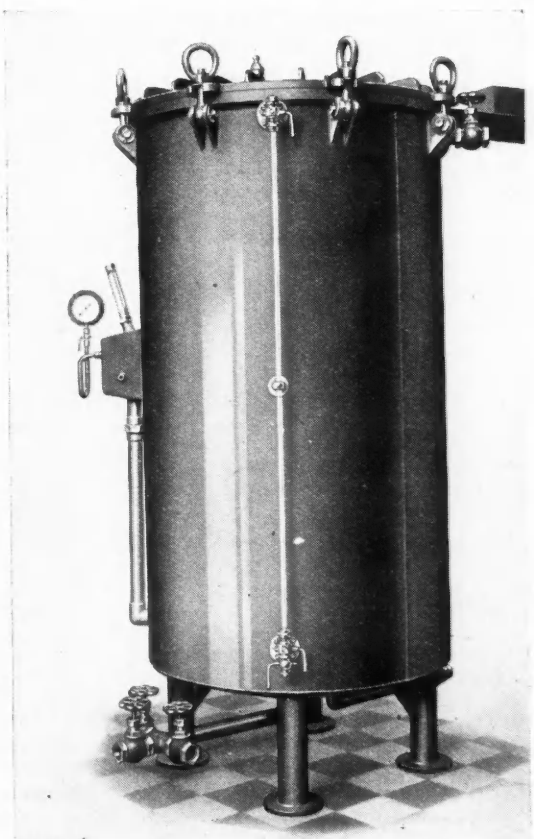
Anchor steel plates for industrial floors where these is particularly heavy traffic are being shown by *Stelcon (Industrial Floors, Ltd.* A " Stelcon " floor is level and remains level even under heavy wear and tear, so that considerable savings can be made in trucking and handling charges, and the risk of damage to merchandise through excessive vibration or the upsetting of trucks is eliminated. The design of " Stelcon " anchor steel plates is such that every three square inches is securely anchored to the concrete sub-floor, thus providing a dustless, immovable, all-steel floor.

An exhibit of small stainless steel castings made by the *Edgar Allen and Co., Ltd.*, including stainless steel, heat-resisting steel, manganese steel, and ordinary steel castings, are shown on Stand D719.

James Walker and Co., Ltd. (Stand D620) are exhibiting " Lion " packing which still enjoys a universal reputation. There is also a representative display of packings and jointings for all pressures and temperatures of steam, fluids and gases, which will adequately meet the demands of the most exacting modern conditions. All products are subject to laboratory tests and the research department is constantly employed in experimental work.

The Zinc Alloy Rust Proofing Co., Ltd., have a technical information bureau at Stand B714, where specimens are on view to demonstrate the exceptionally long life of Sherardising under exposed conditions.

The extensive and growing use of rubber and ebonite in the service of industry is forcibly demonstrated by the display staged by *Redfern's Rubber Works, Ltd.* (Stand D210). Interesting examples are shown of new and ingenious ways of adapting and using rubber for protection, suspension, conveyance, insulation, silencing and many other purposes. Moulded, extruded and hand-built rubber and ebonite goods for many services are included in the exhibit. Amongst the ebonite goods specially designed for use in the chemical trade—to assist in the handling and conveyance of corrosive acids—are developing trays. Buckets, jugs and measures are also made in laminated rubber and ebonite under the Prov. Pat. No. 26581/36, as well as troughs, etc. The insertion of a ply of



A vertical retort shown by John Thompson (Dudley), Ltd. This is an example of the company's various designs.

rubber between the inner and outer layers of ebonite ensures that a crack on one layer of the ebonite can only proceed through this layer and the contents are held. Ebonite spray pipes for agitators in nickel plating ensure clean work as it is claimed that no deposits from the vats settle on them. A notable feature of this equipment is that the pipes are held in position by an anchoring device at the back of the pipes.

The Rheostatic Co., Ltd. (Stands Cb411 and 310) are showing a complete range of automatic temperature control apparatus, with particular emphasis on thermostats for control of water heaters and space heaters. They have also a greatly improved range of electrically operated valves of the motorised type. The new design of these valves provides greatly increased power to allow positive operation under all conditions of working, and operation is completely silent.

There is a comprehensive range of chemical plant and allied fabrications on Stands D709 and 606. *John Thompson (Dudley), Ltd.*, are showing one of their boiling pans manufactured in stainless steel. These pans are also built with the internal portion of inconel, monel or nickel, according to the product with which they have to deal. The mild steel jacket is welded on in such a manner as not to affect the corrosion-resisting properties of the metal itself. Also exhibited is one of their various designs of vertical retorts, which can pipes, bends, gland cocks, buckets, jugs, measures, and debe fitted with their air and pressure water cooling systems, temperature equalisation and control. *John Thompson (Wolverhampton), Ltd.*, as fusion welding specialists, are showing typical examples of such welding as applied in the fabrication of boiler drums such as they are supplying to some of the largest electrical, municipal and trading undertakings in this country and abroad. Boiler drums and pressure vessels of this type are now being constructed for working pressures of over 1,000 lb. per sq. in. On this stand there is also a very fine example of heavy pressing. It is a dished end end 3½ in. thick by 6 ft. 6 in. diameter, weighing some four tons, being pressed in one operation and used in the construction of a chemical vessel for a working pressure of 900 lb. per sq. in.

The British Gas Federation has arranged a composite exhibit (Stands Ca609 and 508) in conjunction with the makers of gas equipment. A representative selection of furnaces, ovens, burners, boilers and controls is shown on the industrial gas exhibit which covers more than 3,000 sq. ft. Included is a working demonstration of aluminium bronze die-casting staged by the Non-Ferrous Die Casting Co., using a 150 lb. gas fired crucible furnace. The demonstrations are arranged to allow visitors to see for themselves how quickly and conveniently metal can be melted by gas and how accurately the correct temperature can be held. In addition to a fine show of muffle and tube furnaces by the Selas Gas and Engineering Co. there are some interesting new laboratory appliances, a very practical sand bath and a new crucible furnace of very neat design. Bunsen burners by Amal and Co. and glass blowing burners by Chance Bros., complete an interesting collection.

At Stands D603 and 502 *Metalectric Furnaces, Ltd.*, are showing a crucible furnace for melting aluminium and aluminium alloys. This furnace is of the latest type with lip-tilting, motor-operated. The windings are of unique design and of patented construction which allows the removal of the elements whilst the furnace is under temperature. There is also a portable-type furnace for general heat-treatment, and a laboratory-type furnace suitable for general heat-treatment purposes up to 1,000° C. The metalectric re-circulated atmosphere furnace for heat-treatment up to 600° C. incorporates a patent recirculated atmosphere fan.

G. A. Harvey and Co. (London), Ltd. (Stand B329) are noted for the variety of their productions in sheet metal and steel plate, and this is manifested by their exhibits of perforated metal and woven wire for screening, grading, separating, sifting and filtering purposes. The metals, perforated or woven include steel, brass, copper, bronze, stainless steel, nickel and Duralumin, the perforations ranging from round holes 0.015 in. diameter in brass up to 9 in. diameter in steel. Woven wire is produced in any mesh or gauge from the finest centrifugal filter cloth of 520 mesh up to the coarse screens used for grading coal and coke; for the latter a special hard quality steel wire is used. This special steel, which was the outcome of lengthy investigation is hard enough to stand up to the most abrasive materials, such as coke and clinker, and at the same time is sufficiently ductile to resist fracture from fatigue. The exhibit of gilled tubes is of interest to all concerned with heat transfer problems in connection with ventilating, heating, cooling and drying. The "Harco" hot shrunk tapered strip gilled tube is a new departure in gilled tubing and has an efficiency or rate of heat transfer of 25 per cent. greater than that of the crimped type of gilled tube.

The Yorkshire Copper Works, Ltd. (Stands B717 and 630) display non-ferrous tubes in all qualities, and "Yorkshire" fittings, of which they are the sole makers (Patent No. 419521), for water services, heating, gas and pipelines of every description. "Yorkshire" tubes are supplied to pulp and paper mills, oil refineries, gas and water companies, and the dye and chemical industry. The "Yorkshire" fitting for the connection of copper tubing is unique in its neatness, efficiency and economy.

Corrosion and heat-resisting steels, known by the trade marks, "Staybrite" Steel and Firth Stainless Steel, are exhibited by *Firth-Vickers Stainless Steels, Ltd.* (Stands D413 and 314). "Staybrite" steel is of the austenitic type and embraces a wide range of steels for different purposes, and to various analyses. The products are represented by bars of various sizes, sheets of different finishes, forgings, castings, cold rolled strip and drop-stampings, wire, wire mesh, nuts and bolts, etc.

A comprehensive range of well-known steel products are shown at Stands D619 and 518 occupied by *Thos. Firth and John Brown, Ltd.* The heavy side of the manufactures of the company are represented by a large hollow forged seamless boiler drum, cut away to show the interior, castings as used in the mining, quarrying and associated industries; dredger buckets and spares; and Nitralloy steels noted for their extreme hardness.

Screening machines are being exhibited by *Niagara Screens (Great Britain), Ltd.* (Stand D308). There are also specimens of essential parts, such as eccentric shafts, roller bearings, screening cloths, and so forth. The machines are shown running at normal speeds and operate on the rotary principle and contra to the flow of material being fed on. The material is thus kept in a constant state of stratification which ensures complete separation of undersize from the bulk. The resultant minimum grading efficiency of 95 per cent. is guaranteed for almost all articles that are capable of separation, according to size, by mechanical means. Heavy overloads can be imposed on these machines, and they will work under wet or dry operation.

The Staveley Coal and Iron Co., Ltd. (Stands B517 and 416) are showing sand spun pipes 16 ft. long of the socket and spigot, turned and bored flexible joint types. They can supply pipes concrete lined and/or bitumen coated. Wood wool for all packing purposes, and a variety of chemicals and by-products are other features of the Staveley exhibits.

On Stand D206, *Imperial Chemical Industries, Ltd.*, have a working furnace using "Rapideep," and visitors are being invited to bring samples of their work for casehardening treatment. Case depths obtained with "Rapideep" are deeper than those conferred by a cyanide bath and have the additional advantage of being glass hard for over half their depth as compared with a third with cyanide. The processes developed by the Cassell Cyanide Co. cover heat treatment and case hardening in salt baths, including the hardening of high speed steel. Salts are available for use at temperatures from 150° C. to 1,400° C., and furnaces can be supplied for these temperatures heated by gas, oil or electricity.

Three of the latest degreasing plants will be shown in operation on Stand D305, also occupied by *Imperial Chemical Industries, Ltd.* One of these, the gas-heated " V 2 " type, is fitted with an overhead gantry and electric hoist, and is designed for general degreasing requirements in the heavy metal industries. The other two are of the so-called liquor vapour type, in which the greasy articles are given a preliminary wash in boiling liquid solvent to remove grease and solid particles before passing on to a separate compartment for a final cleansing in vapour. They are a gas-heated " LV 2" and a larger continuous gas-heated plant of the type supplied to various plating firms in the Birmingham area. These plants operate on a self-cleansing principle, and have been designed to satisfy the exacting requirements of the electroplating industry.

The United Steel Companies, Ltd. (Stands 512 and 613) have " brought the works to the Fair " by means of a cinema in which are being shown films of the production of various materials. The films, some of which are in actual colour, include " The manufacture and use of ' Phœnix ' (standardised) rapid machining steel," " The manufacture of Workington hematite irons," " The production of Appleby plates," etc. These films are shown at 10.30 a.m., 12 noon, 2 p.m., 3.30 p.m., and 5 p.m. Among exhibits the development in the production of electric steels is of particular interest, as it is a result of the persistent demand of designers and engineers for cleaner and better steels.

The exhibit of *The British Thermostat Co., Ltd.* (Stand Cb700) has been designed to demonstrate the wide range of thermostatic equipment and other automatic control apparatus for refrigeration plant, space heating, air conditioning and industrial heating processes manufactured by the company. Examples of a new model automatic expansion valve, available in pressure-operated and thermostatic forms, are shown this year for the first time. In addition to control instruments proper, there is a wide range of stop valves for refrigeration plant, bi-metal and also vapour pressure-operated thermostats for the control of room temperature, thermostatic switches for operating on duct temperature, and for immersion in heated liquid.

Further Notes on Exhibits at Olympia

IMMEDIATELY on entering the Olympia section of the British Industries Fair, the improvement afforded by the re-arrangement of the various sections can be noticed. The chemical section is in a prominent position just inside the Addison Road entrance, and adjoining it are grouped those sections most closely related to it; the plastics section and the scientific instrument section. Satisfaction was expressed that the chemical section has now been removed in the new arrangement from the close vicinity of the sample-distributing colonial stands. Another notable feature of the section is the enlarged exhibiting space allocated to each stand. Exhibitors clearly made full use of this facility, as shown by the most attractive stands of this year's fair. Almost every exhibitor in the chemical section has broken away from his own personal, traditional design of stand and probably in no other section at Olympia are the stands of such generally pleasing construction, giving, at the same time, ample accommodation for visitors, in addition to the space taken up by the actual exhibits on view. The following are brief notes on exhibits of interest at Olympia, which are additional to those published in last week's issue.

In addition to exhibits of interest to the jewellery trade, *Baker Platinum, Ltd.,* show a range of platinum crucibles, electrodes, gauze catalysts for the oxidation of ammonia and apparatus for micro-chemical work. It is pointed out that the company specialises in the production to order of platinum apparatus to meet the customer's requirements. A feature of the stand of *Boots Pure Drugs Co., Ltd.,* is a collection of interesting transparencies showing manufacturing operations in their works and the testing of biological products. There is also shown an X-ray apparatus, as used for assaying vitamin preparations, and an ultra-violet light apparatus for fluorescence testing. *The British Drug Houses, Ltd.,* exhibit a specimen of nicotinic acid which they have just started to prepare. This product is used as a pellagra preventative and curative.

Of special interest on the most attractive stand of *W. J. Bush and Co., Ltd.,* is a new series of fruit essences for confectionery. These are 90 per cent. pure fruit juice and are marketed under the name " Eesi-Flo." *Combined Optical Industries, Ltd.,* exhibit a range of simple optical lenses prepared from plastic by a moulding process. A new system of feeding boiler composition with the actual feed water into pipes, economisers, boilers, etc., is shown by *Crystal Co., Ltd.* Under the new system it is claimed that a more positive and constant feed is assured and boilers and pipes get full benefit of the composition introduced. On the stand of *Detel Products, Ltd.,* there are numerous exhibits demonstrating the protective qualities of Detel paint products. Perhaps the most striking of these are two displays in which a five pound note, coated with Detel clear varnish, is submitted to the action of concentrated sulphuric acid and caustic soda respectively.

Of special interest on the stand of the *General Chemical and Pharmaceutical Co., Ltd.,* are 2 :4 dihydroxyacetophenone, and n-phenylanthranilic acid, an oxidation-reduction indicator. 2 :4 Dihydroxy acetophenone appears to be becoming of increasing interest and is used as a starting point for the synthesis of a number of colouring matters, many of which are identical with, or approximate to the natura colouring matters

A view of the stand of The British Drug Houses, Ltd., at Olympia.

found in the vegetable world. It has recently been suggested as a reagent for the detection of iron. *Howards and Sons, Ltd.*, show sorbital syrup 80 per cent. technical grade again this year, in addition to their exhibits previously described. The product is used for softening leather, etc. In addition to the products of interest to the photographic industry being shown by *Johnson and Sons, Manufacturing Chemists, Ltd.*, a number of pharmaceutical products are displayed. Of these prominence is given to Estersil, a fine chemical product being a mixture of esters of acetylsalicylic acid, for external use in cases of rheumatism, etc. Pigments for ceramic ware, cadmium and selenium pigments for general use and a series of precious metal salts for electro-plating are on the stand of *Johnson, Matthey and Co., Ltd.*, in addition to their products of interest to manufacturing goldsmiths, silversmiths and jewellers.

Raw materials used for the production of plastics and numerous examples of finished products are shown by *Mouldrite, Ltd.*, the most striking feature of the stand being a Perspex sphere, 39 in. in diameter, designed to show the shaping properties of this highly transparent plastic. The stand of *Newton, Chambers and Co., Ltd.*, shows some striking photomontages and graphs illustrating the loss to industry caused by preventable illness. They demonstrate that by a simple system of factory hygiene, involving the use of the germicide Izal, this loss can be avoided. The exhibits of *Powell Duffryn Associated Collieries, Ltd.*, are concerned with the applications of Presotim, a decorative wood preservative, Presomet, a bituminous black paint for the preservation of metal, and Synthaprute, liquid waterproofing and jointing materials. Illustrations of new uses for this last product are in the treatment of flat concrete roofs, the laying of wood block floorings, and in vertical damp courses.

David Thom and Co., Ltd., show a range of pure potash soaps, 100 per cent. powdered soap, natural coconut oil potash soaps for shampoos, soap flakes for industrial use, and glycerine in crude, industrial and pure grades. In addition to the exhibits already described of *Thos. Tyrer and Co., Ltd.*, several analytical reagents are also shown, together with samples of metallic bismuth. *Williams (Hounslow), Ltd.* show Panther Black, a new acid black for staining and dyeing leather, and Acid Leather Brown ERA., a full shade brown for leather, particularly suitable for chrome leather. An attractively arranged showcase demonstrates the application of the company's colours in food products. A postcard addressed "Hounslow of Hounslow, England," which was safely delivered to the company, is shown on the stand as a tribute to their world-wide reputation.

Chemical Matters in Parliament

Manufacture of Calcium Carbide

IN the House of Commons on February 16, Mr. Sexton (Barnard Castle) raised the question of the location of factories for manufacturing calcium carbide. He said that we have lagged far behind all other countries in the manufacture of this commodity, and while we have been lagging behind, other countries have been working. Germany, Japan and Italy, three significant nations, have been turning their attention lately to the manufacture of calcium carbide, because calcium carbide is the basis for two very important basic products. The first of these is calcium cyanamide, which in itself is the basis of nitric acid, which means high explosives. Not only is calcium cyanamide used for the production of nitric acid, but also for the production of nitrolim, which is an important fertiliser, so that in peace time calcium carbide factories are of great importance. The second basic product is acetylene, which nowadays is very prominent in the welding process by oxy-acetylene gas. The annual world production of calcium carbide runs to between 2,000,000 and 3,000,000 tons, and this country uses approximately 60,000 tons. Not one ounce of that is made in this country, but the major part, amounting to about 54 per cent., is imported from Norway.

In setting up these factories, continued Mr. Sexton, we must consider the source of the electricity, the speed of construction and the vulnerability to air attack. While electricity can be made from steam, the speed of construction, which is vital, depends on whether we use thermal electricity or hydro electricity. If thermal electricity, made from coal, is used, the plant can be constructed and producing carbide in about one year. If hydro electricity is used, the plant can be constructed and producing carbide in about three years. South-West Durham had abundant coal of varying kinds and the finest limestone in the country, containing 98 per cent. of calcium carbonate. They are close together; the transport cost would be practically nil and, more important, there are 10,900 fewer miners in work now than there were 20 years ago. Those men are on the spot. In the limestone quarries there are 700 fewer men at work now than there were 20 years ago—they are also on the spot. He therefore contended that South-West Durham ought to have been considered, but it had not been considered. The same argument that could be used for putting a calcium carbide factory in South Wales could be used for putting one in South-West Durham.

The Minister for the Co-ordination of Defence (Sir Thomas Inskip) said that so far as South-West Durham is concerned, he was not aware that any real practicable proposal to put up money for the establishment of such an industry in South-West Durham had ever come forward. If anybody was prepared to establish such a factory in South-West Durham no doubt the location is open to them to-day; and the Government would welcome such a factory.

Falmouth Report

In the House of Commons on February 23, Mr. Gallacher (Com., W. Fife) asked the Minister for the Co-ordination of Defence if he had any information as to the means by which the terms of the Falmouth Report were in the hands of the German Government prior to its publication in this country. He also asked if the Minister knew how a leading banking firm was made aware of the contents of the report six weeks before publication and was thus able to negotiate for the purchase of an option on the Fischer process of extracting oil from coal.

Sir Thomas Inskip: My attention has been called to allegations appearing in an organ of the Press to the same effect as the allegations contained in the first question. Inquiry was made with a view to testing the allegation contained in the second question, and the result showed the allegation to be unfounded. All the information I have shows that the allegation in the first question is equally without foundation.

In view of the serious statements made in these questions I invite Mr. Gallacher to give me all the information at his disposal in order that the matter may be thoroughly investigated.

Land Fertility Scheme

Lord Cranworth, chairman of the committee which is administering the scheme, said in the House of Lords on February 23 that they had dealt with 110,000 applications on behalf of 94,000 farmers. The committee had distributed 640 tons of lime and 284 tons of basic slag. Applications for assistance were still coming in at the rate of 1,000 a day.

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Personal Notes

MR. F. W. WEAVER, having ceased active work on behalf of F. W. Hampshire, manufacturing chemists, Derby, has resigned from the board.

MR. C. A. MASTERMAN, chief technical officer to the Gas Light and Coke Co., delivered the 17th Sir Jesse Boot foundation lecture on February 18 at Nottingham University.

THE LATE MR. EBENEZER BUTTERWORTH, of Leamington Spa, chairman of E. Butterworth and Sons, Ltd., dyers, of Warwick, left estate value £58,254, with net personalty £51,837.

LORD MAY has been reappointed chairman, and Sir Sydney Chapman and Sir Allan Powell have been reappointed members, of the Import Duties Advisory Committee for a further term of three years from March 1.

THE LATE SIR BENJAMIN SANDS JOHNSON, Liverpool, chairman of John Brothers (Dyers), Ltd., left gross estate of £552,192, with net personalty £511,668, on which estate duty amounting to £174,611 has been paid.

MR. A. E. OVERTON, of the Board of Trade, headed the British delegation which sailed for the United States on February 16, in connection with the trade agreements which are being negotiated between Britain and the United States.

MR. H. W. BRIGHTEN, A.M.I.Mech.E., A.M.I.E.E., has recently been appointed by Kodak, Ltd., to be assistant manager in charge of engineering activities. Mr. Brighten has been for a considerable time works engineer of the Metropolitan-Vickers Electrical Co., Ltd.

MR. A. B. PURVIS, who is president and managing director of Canadian Industries, Ltd., associated with Imperial Chemical Industries and engaged in the manufacture of chemical products in Canada, has been elected a director of the Canadian Pacific Railway Co.

MR. J. C. CUMING, a representative of The Adelaide Chemical and Fertiliser Co., Ltd., of South Australia, will arrive in England on March 4, for a visit of two or three months. He will subsequently visit the Continent and return to Australia via America. He will stay at the Cumberland Hotel, Marble Arch, London, W.

DR. E. J. WILLIAMS has been appointed professor of physics at the University College of Wales, Aberystwyth. He worked with the late Lord Rutherford at Cambridge, and also spent fifteen months in Copenhagen with Professor Bohr. In 1930 he was awarded the degree of Doctor of Science in the University of Wales.

SIR LEONARD LYLE, president of Tate and Lyle, Ltd., left England on February 17 on board the Canadian Pacific steamer "Duchess of Atholl," for a cruise to Trinidad and Jamaica. He will be visiting estates recently purchased for Tate and Lyle, Ltd., and will possibly return to England towards the end of March.

MR. THEODORE INSTONE gave a luncheon at the Savoy Hotel, London, on February 16, when the speakers stressed the danger of the increasing dependence of the Navy and other services upon oil fuel. Some of the speakers urged the necessity of a dual firing system or a return to coal, of which Britain possesses ample supplies of good quality.

MR. H. H. BURTON has been appointed a special director of the English Steel Corporation, Ltd. He succeeded the late Mr. J. H. S. Dickenson as chief metallurgist to the Corporation in January, 1935. He is a member of the Iron and Steel Industrial Research Council of the British Iron and Steel Federation, and several of the scientific committees which operate under that research council, including the ingot and alloy steel committees. Apart from his extensive experience in the development of alloy steels for heavy forgings, he has been responsible for the introduction of some of the newest special steels which are used in the aircraft and automobile industries.

SIR J. J. THOMSON, O.M., F.R.S., has been awarded the Kelvin medal for 1938 in recognition of the eminent services he has rendered to engineering science.

SIR ROBERT H. PICKARD, D.Sc., F.R.S., president of the Institute of Chemistry, has been presented with the Honorary Freedom and Livery of the Worshipful Company of Leathersellers.

MR. CLARENCE A. SEYLER, of Swansea, has been awarded the gold medal of the South Wales Institute of Engineers (1937), for his paper on "Petrology and the Classification of Coal," which is regarded as the outstanding paper of the past season.

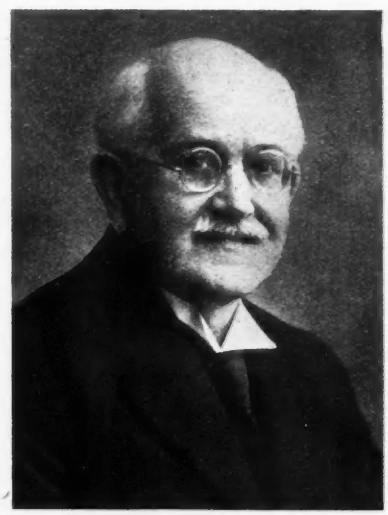
OBITUARY

MR. WILLIAM JOHN RAWSON, who worked in the bleach department at the Pilkington-Sullivan Works, Widnes, for over 30 years, died on February 15, aged 52, after a long illness.

MR. JOHN CRAWFORD, who was at one time chairman of the Coal Exporters' Association, died last week. He was associated with Crawford Duff and Co., shipping agents, Glasgow.

MR. WILLIAM DENNETT, who was known to all who worked at the soap works of Wm. Gossage and Son, Ltd., Widnes, during his 51 years on the glass furnace and caustic plant, died on February 20. He retired about twelve years ago.

DR. ERNEST GOULDING, D.Sc., F.I.C., F.C.S., who for 39 years devoted his whole time to a furtherance of the scientific and technical work of the institute on Empire raw materials, both in laboratory investigations and in intelligence services, at the Imperial Institute, has died. As secretary of the



Advisory Committee on Vegetable Fibres since its appointment in 1926 he contributed largely to the success of work which has had a wide influence on Empire production, especially of sisal in East Africa.

Foreign Chemical Notes

Finland

A FACTORY FOR CASEIN AND CASEIN PRODUCTS has been started up at Seinajoki (Central Finland) by the firm of O.Y. Kaseini.

Japan

SALT-DRYING BEDS with an annual capacity of 150,000 tons have been laid down by the Japanese Salt Industry Co. (Dai Nippon Engyo K.K.) in Formosa.

From Week to Week

THE BUCHANAN CHEMICAL CO., of Glasgow, has been admitted to the membership of the Glasgow Chamber of Commerce.

OWING TO LACK OF STUDENTS the day classes in sugar manufacture at the Royal Technical College, Glasgow, will be discontinued on the completion of the session in 1939.

THE NATIONAL PETROLEUM DISTRIBUTING COMPANIES have announced a reduction of ½d. per gallon, to 1s. 6½d., in the price of motor spirit. The previous change was made in July of last year when the price was also lowered by ½d. per gallon.

A NEW FACTORY FOR THE MANUFACTURE OF RAYON STAPLE FIBRE is to be started in Yorkshire by Van Weyenbergh Processes, Ltd., of London. It will supply a specialised fibre for the production of extra high tenacity yarns for the woollen and worsted trades.

ROYAL SCHOLARSHIPS IN SCIENCE (Chemistry) have been awarded to Richard J. Fielden (Blackburn Municipal Technical College), Granville Broughton (Burnley Municipal College and Blackburn Municipal College), George H. Maddra (Malet Lambert High School, Hull).

A NEW INDUSTRY HAS BEEN BROUGHT TO GLASGOW by the opening of new works at Shieldhall for the manufacture of modern fireproof building materials. The works, which cover a large riverside area, have been built by Gyproc Products, Ltd., an associated concern of the Distillers Co., Ltd.

THE ASSOCIATION OF BRITISH CHEMICAL MANUFACTURERS have published Supplement No. 1 to the second edition of the "Index to Acts of Parliament and Statutory Rules and Orders affecting the Chemical Industry." Copies can be obtained from W. Heffer and Sons, Ltd., Cambridge, price 6d. post free.

A PROPOSAL TO RENEW FOR FIVE YEARS the international agreement on rubber restriction, which was signed in 1935 and expires at the end of the year, has been approved by the international committee and communicated to the interested Governments for their approval. The text of the renewal proposal will be published when the Government's approval has been secured.

THE UNIVERSITY OF MARYLAND, in co-operation with the United States Bureau of Mines, is offering three fellowships for research in the field of engineering and applied science. Applications should be addressed to: Fellowship Committee, Eastern Experiment Station, Bureau of Mines, United States Department of the Interior, College Park, Maryland, before April 1.

THE DISCOVERY OF A NEW DRUG to cure as well as to prevent disease due to a virus is announced by the American Association for the Advancement of Science in its official organ *Science*. The new drug is sodium sulphanilyl sulphanilate. Its discoverers are Professor Alphonse R. Dochez, and Dr. C. A. Slanetz, of the College of Physicians and Surgeons, Columbia University. The drug has been found to prevent, as well as cure, distemper in dogs and cats.

THE MEXICAN GOVERNMENT'S TRANSACTION with Cory's, of London, for the purchase of approximately 1,000,000 barrels of oil produced by the Government company is regarded in oil circles in Mexico City as highly significant and as demonstrating further the policy of the Government to finance in connection with powerful foreign concerns in its own oil programme. The oil is to be delivered in the near future to England in ten British tankers from Tampico. The Government company is now producing some 10,000 barrels daily, and has about 500,000 barrels stored.

WALKER, CROSWELLER AND CO., LTD., announce that present premises having become too small for their steadily increasing business, it has become necessary to move from London to Cheltenham, Gloucestershire, where larger offices and works have been built on a seven-acre site. Most of the staff and workmen will move with the company. Their new telephone number is Cheltenham 5172 (3 lines); Telegrams: Instrukemi, Cheltenham. The London branch address is: 6 Gordon Square, London, W.C.1. Telephone: Mus. 3107-8. The Manchester address is Box 110 Manchester Royal Exchange. Telephone: Cheadle Hulme 1051.

THE INTERNATIONAL FEDERATION FOR DOCUMENTATION and the Association for Special Libraries and Information Bureaux are to hold their 1938 conferences at Lady Margaret Hall, Oxford, during the fourth week in September, under the presidency of Sir William Bragg, F.R.S. Papers will be read upon theories of classification, cataloguing and indexing—methods and apparatus used in the organisation of libraries, archive repositories, registering and filing centres—photographic and other copying processes in their application to bibliographical problems—the making of abstracts from periodical literature—directories of information—the practical application and use of bibliographies, etc. Offers of papers are invited and should reach the secretary, Miss M. Gosset, The Science Library, South Kensington, London, S.W.7, not later than March 14.

CAMBRIDGE UNIVERSITY PRESS have changed their London address from Fetter Lane, E.C.4, to Bentley House, 200 Euston Road, N.W.1.

THE EXPLOSIVES known as Polar Samsonite No. 3a and Polar Samsonite No. 3a (sheathed with borax) have been added to the list of permitted explosives for general use in mines to which Part II of the Explosives in Coal Mines Order applies.

STEWARTS AND LLOYDS, LTD., have changed the address of their Publications Department from Kings Buildings, Dean Stanley Street, Westminster, London, S.W.1 to 145, Queen Victoria Street, London, E.C.4. Telephone: Central 3418.

ELEVEN EMPLOYEES AND FORMER EMPLOYEES of James Burt-Marshall, Ltd., bleachers and dyers, Luncarty, Perthshire, are to be honoured by the Bleachers' Association, Manchester, in recognition of long service Their total years of service number 550.

A NEW BOOKLET ON HASTELLOY HIGH-STRENGTH ALLOYS, for corrosion resistance, has been published by Haynes Stellite Co., New York. Information is provided concerning physical and mechanical properties and the available forms in which the materials are furnished.

THE PRAGUE INTERNATIONAL FAIR will be held March 11 to 20. With the upward trend in the foreign trade of Czechoslovakia in 1937, the export industries have been interested more than ever in the Fair, which will therefore have the largest number of exhibitors since its foundation.

THE NEW official handbook of present conditions and recent progress in Canada, contains nineteen chapters dealing concisely with the various phases of Canada's economic development. Copies can be seen at the London offices of the High Commissioner for Canada, Canada House, Trafalgar Square, S.W.1.

A SUPPLEMENTARY RANGE OF COLOURS for Spring and Summer, 1938, has been issued by S. Hubbard, Ltd., wool and fur felt body manufacturers, Luton. They are of the opinion that if it is possible in the future to delay the issue of the standard colour card to a later date the necessity of a supplementary card will not arise.

A NEW BRITISH STANDARD SPECIFICATION for Wrought Iron Chain Slings (B.S.S. No. 781-1938) is noteworthy as hitherto there has been no authoritative specification for chain slings or components, while virtually every works has ned to cite an independent specification for such lifting gear, the importance of which from the viewpoint of safety cannot well be overemphasised.

AN IMPROVED METHOD OF PRODUCING IRON AND STEEL which, it is claimed, might save between £7,000,000 and £14,000,000 a year in the United States alone, has been described at the meeting in New York of the American Institute of Mining and Metaldurgical Engineering. The inventor of the process, Mr. Julian Avery, explained that it involved the use of higher pressures in pig-iron blast furnaces, thereby eliminating waste.

CROFTS (ENGINEERS), LTD., of Thornbury, Bradford, have issued a new catalogue describing internal gear flexible couplings. These couplings are now standardised in a range of sizes to meet all industrial requirements. The "Maxiflex" coupling is a patented design and embodies a new principle inasmuch as it utilises entirely separate members to deal with misalignment, end movement, etc., and also overloads and torsional oscillations.

ITALY'S QUICKSILVER PRODUCTION reached 2,305 metric tons in 1937. This is a new all-time record. It compares with 1,472 tons in 1936, 441 tons in 1934, and 1,998 metric tons in 1929, the previous record year. Exports of quicksilver from Italy have risen even more sharply than the output. They totalled 2,312 metric tons in 1937, compared with 1,426 tons in the preceding year. Italy is normally the world's second largest quicksilver producer. Production and export figures for 1937 from Spain, the largest supplying country, are not available, but the Spanish production must have been very near its peak level of 2,492 metric tons, reached in 1927, and exports from Spain are likely to have been even in excess of this figure in 1937.

A FIRE, FOLLOWED BY A SERIES OF EXPLOSIONS, totally destroyed the works of the British Oxygen Co., Ltd., in Curlew Road, Jarrow, on February 19. The fire broke out in a store containing several hundreds of acetylene gas cylinders, and as these became ignited they exploded. Large pieces of flying metal crashed through roofs and walls of houses in the neighbourhood, and people ran out into the streets in alarm. The explosions lasted over a period of two hours and were heard several miles away. Nearly every shop and house window in the immediate vicinity of the disaster was shattered. It is estimated that 230 houses are damaged. A Home Office inquiry will be held. About forty men are employed at the works. Cylinders and pieces of cylinders were collected from over a wide area. The British Oxygen Co decided some time ago to build new works in the Chester-le-Street district.

THE PRICE OF REFINED GLYCERINE has been reduced by 5s. per cwt., all round, from February 18, states Glycerine, Ltd.

CONSOLIDATED RUBBER MANUFACTURERS, LTD., hitherto at 3 St. James Square, London, S.W.1, have moved their offices to 147 Grosvenor Road, London, S.W.1.

HENRY WIGGIN AND CO., LTD., who specialise in the production of nickel alloys, have just issued a complete list of metals which they manufacture and/or sell. The list includes a number of chemicals which are used in certain industries.

CHEQUES HAVE BEEN PRESENTED by the Croydon Education Committee to two Croydon Polytechnic students, S. A. Mitchell and J. W. Martin, in recognition of their bravery in averting an explosion of acetylene gas in a classroom.

THERE WAS A DECLINE IN THE OUTPUT OF MARGARINE in the United Kingdom according to the figures compiled by the Imperial Economic Committee, from a weekly average of 4,165 tons in December to 3,054 tons in January. This is still an increase of about 8 per cent., however, on the figure of 2,815 tons for the corresponding weeks of 1937, and is also higher than in the same period of 1936 and 1935.

THE FIRST CONGRESS ON THE CHEMISTRY OF WOOD, to which reference was made in THE CHEMICAL AGE, December, 1937, (page 499) will be held in Vienna, July 5 to 8. The conference will be under the patronage of H. E. Wilhelm Miklas, president of the Federal State of Austria. The president of the organising committee is Professor H. Mark, principal of the first chemical laboratory at the University of Vienna.

THE KING AND QUEEN and the Duke of Kent attended by Mr. Oliver Stanley and Lady Halifax, visited the stand of Imperial Chemical Industries, Ltd., at Olympia, on February 22, and were received by Mr. Sidney Rogerson, publicity manager of I.C.I. The King spent a considerable time inspecting the flow-sheet which shows how the alkali products that are used in every industry in Great Britain are made from rock salt, coal and limestone.

PROPOSALS OF THE NEW RUBBER REGULATION SCHEME have been published in the form of a draft agreement recommended to the Governments of the rubber-producing countries. Very much on the same lines as the existing scheme, which expires at the end of this year, the new scheme will run for five years until the end of 1943. The most important change is in the basic quotas, which have been revised in the light of recent experience of what the industry can produce. As anticipated, the basic quotas of the smaller producers have been increased.

ACCORDING TO THE EGYPTIAN TRADE FIGURES for the twelve months ended December 31, 1937, the total exports increased by nearly £E7,000,000 to £E39,759,352, while imports increased roughly £E6,500,000 to £E38,037,486, leaving a favourable trade balance of about £E1,700,000, an increase of about £E250,000 on last year's balance. Whereas Italy and Germany have considerably increased their trade, both having large favourable balances, the British unfavourable balance is still over £E4,000,000, although exports increased by about £E700,000.

THE GLASGOW JUNIOR CHAMBER OF COMMERCE is preparing a list of Scottish chemical manufacturers.

THE IMPORT DUTIES ADVISORY COMMITTEE announce that they have decided not to make any recommendations in regard to the applications relating to barium chloride.

THREE CENTRIFUGAL DRIERS for the coke oven installation of Colvilles, Ltd., at Clyde Iron Works, Tollcross, Glasgow, are being supplied by Pott, Cassells and Williamson.

NORTH KESTEVEN RURAL COUNCIL have granted permission to the Darcy Exploration Co. to sink four trial bores, prospecting for oil, in the refuse tip at Bracebridge Heath.

THE 4TH ANNUAL BRITISH INDUSTRIES DINNER-BALL will be held at Grosvenor House, London, on March 2. Guests will be received by Mrs. Chamberlain, and among the speakers will be the Earl of Dudley and Lady Maureen Stanley.

EAST POOL TIN MINE, near Redruth, Cornwall, which has been worked continuously for more than one hundred years, is to be closed down owing to the fall in the price of tin. It is stated that the mine cannot be worked profitably when the price of tin falls below £250 per ton.

BRITISH EXPORTS TO SPAIN during 1937 were approximately 30 per cent. higher than in 1936. The increase was due to orders received from Spanish Government territory. Total British exports to Spain amounted to £2,125,706. The principal British export to Government Spain was coal, amounting in value to £846,122; coke and manufactured fuel, £112,000; sulphate, dyes and other chemicals, £74,730.

A BOOKLET ENTITLED "NEW FIELDS FOR INDUSTRY," has been issued jointly by the Commissioners for the Special Areas in England and Wales and in Scotland. It sets out briefly the special inducements which can now be offered to industrialists contemplating the setting up of undertakings in the Special Areas. It gives very full information as to the nature of the facilities which can be offered.

Chemical Trade Inquiries

The following trade inquiries are abstracted from the "Board of Trade Journal." Names and addresses may be obtained from the Department of Overseas Trade (Development and Intelligence), 35 Old Queen Street, London, S.W.1 (quote reference number).

British India.—The Director-General, India Store Department, Belvedere Road, Lambeth, London, S.E.1, invites tenders for bismuthi carbonas, subnitras and salicylas, B.P. Tenders due March 1, 1938. Form of tender obtainable from the above at a fee (which will not be returned) of 5s.

France.—An agent established at Asnieres, Seine, wishes to obtain the representation, on a commission basis, of United Kingdom manufacturers of solders, pastes, metal powders, accessories, etc., for chemical and metallurgical trades. (Ref. No. 129.)

Chemical and Allied Stocks and Shares

THE stock and share markets have regained a greater measure of stability this week in the hope that recent developments have opened up the possibility of less uncertain conditons in political affairs. Values in the industrial and other sections of the Stock Exchange have shown an all-round improvement, but have so far not regained the levels ruling a week ago.

Imperial Chemical are 31s. 4½d., which compares with 32s. 3d. a week ago. The market is continuing to talk of an announcement regarding a measure of decentralisatio in the organisation of the group. Lever and Unilever were active, and at 38s. 9d. have risen 1s. 3d. on balance, awaiting the dividend announcement, which may be made early next month. Boots Pure Drug showed improvement subsequently, and are 45s. 3d., which is within 9d. of the price current a week ago. Courtaulds fluctuated, pending the full results and meeting, and are 41s. 6d., compared with 42s. 6d.

Associated Portland Cement recovered to 85s. 6d., awaiting next month's dividend announcement. Swedish Match were an active feature at higher prices, having changed hands around 25s. 6d. As mentioned here before, the market is not budgeting for the resumption of dividends this year, but is assuming the results will show considerable improvement both in earnings and the financial position. British Match at 34s. 9d. are within 3d. of the price current a week ago. British Oil and Cake Mills preferred ordinary shares made the slightly higher price of 47s. Borax Consolidated were steadier later, but on balance have declined from 27s. 3d. to 25s. 6d. General Refractories are 13s. 9d. compared with 14s. 9d.

Dunlop Rubber ordinary units showed an improved tendency around 32s. Towards the end of last year the market was talking of the possibility of a further small increase in the dividend, but would now be satisfied if the distribution were kept at 9 per cent., the rate which ruled for 1936. The disposition is to assume the directors may decide on a conservative policy in view of the fact that the company has large interests in export markets.

Many of the heavier priced shares made good recovery from the lowest levels touched recently. Murex were better at 82s. 6d., as were Turner and Newall at close on 80s. British Oxygen improved sharply to 72s. 6d. The market is continuing to assume that the directors will maintain the dividend at 15 per cent., and that there may be the possibility of a further bonus of some kind. When the maintenance of the inerim dividend at 7 per cent. was announced they stated that although the results to date would justify a larger payment it had been decided to leave the question of an increased dividend or bonus until the results for the year were known.

British Plaster Board improved 1s. 9d. to 29s. 3d., attention being drawn to the large yield offered by these 5s. shares. For the previous year the dividend was 50 per cent., and in respect of the current year the interim payment has been maintained at 20 per cent. Triplex Safety Glass at 43s. 9d. was another share to move in favour of holders.

Securities of iron, steel and allied companies participated fully in the better market tendency. Dorman Long recovered 1s. 9d. to 30s. and Colvilles 1s. 3d. to 23s. 6d., while Guest Keen at 27s. 3d. are 1s. above the lowest price touched in the past few days. United Steel ordinary improved 1s. 4½d. to 26s. 3d. Declaration of the interim dividend of the last-named company is imminent. Oil shares also made better prices, including Anglo-Iranian, "Shell," and Trinidad Leaseholds, despite the reduction in the price of petrol. It had been anticipated that the "cut" in the latter would have been 1d. instead of ½d. per gallon.

Inventions in the Chemical Industry

The following information is prepared from the Official Patents Journal. Printed copies of Specifications accepted may be obtained from the Patent Office, 25 Southampton Buildings, London, W.C.2, at 1s. each. The numbers given under "Applications for Patents" are for reference in all correspondence up to the acceptance of the Complete Specification.

Applications for Patents

ELECTRIC RESISTANCE ALLOYS, ETC.—British Driver-Harris Co., Ltd., and W. M. Kay. 3706.

MANUFACTURE OF ARTIFICIAL PLASTIC MASSES, ETC.—British Glycerine Manufacturers, Ltd. (Belgium, April 17, '37.) 4062.

TANNIC ACID COMPOUNDS.—British United Chemicals, Ltd. (United States, Feb. 12, '37.) 4110.

PASSIVATION OF METAL.—F. G. Budd Manufacturing Co. (United States, Feb. 23.) 3561.

PREPARATION OF UNSATURATED ALDEHYDES.—G. N. Burkhardt, I. M. Heilbron, and J. B. Aldersley. 3457.

PREPARATION OF DERIVATIVES OF OESTRADIOL.—Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Resvenytarsasag Dr. Keresztv and Dr. Wolf. (Hungary, Feb. 17, '37.) 3822; (Hungary, May 29, '37.) 3823; (Hungary, Jan. 15.) 3824.

MAGNESIUM ALLOYS.—F. Christen. (Switzerland, Dec. 30, '37.) 3918.

APPLICATION OF DETERGENTS, ETC., to steel wool.—A. M. Cory, and J. Stephenson and Co. (London), Ltd. 3642.

MANUFACTURE, ETC., OF DISPERSING, ETC., AGENTS.—Deutsche Houghton Fabrik Kommandit-Ges. (Germany, March 17, '37.) 4112.

MANUFACTURE OF AQUEOUS SOLUTIONS.—Deutsche Hydrierwerke, A.-G. (Germany, Feb. 4, '37.) 3638.

PRODUCTION OF CELLULOSE FROM GRASSES.—B. Donner. 3592.

RECOVERY OF CELLULOSE ETHER.—Dow Chemical Co. (United States, Feb. 5, '37.) 3606.

CHILL MOULD for production of ingots from alloys.—Dürener Metallwerke, A.-G. (Germany, Feb. 9, '37.) 3692; (Germany, June 11, '37.) 3693.

PRODUCTION OF INGOTS, ETC., from alloys of aluminium, etc.—Dürener Metallwerke, A.-G. (Germany, Feb. 9, '37.) 3593; (Germany, June 11, '37.) 3594.

UTILISATION OF HEAT of combustion pyrites in manufacture of sulphuric acid.—A. G. Exploration Co., Ltd., and J. W. Burland. 4103.

MEANS FOR PURIFYING AQUEOUS SOLUTIONS of titanium compounds.—H. G. C. Fairweather (Sherwin-Williams Co.). 3611.

PRODUCTION OF TANNING-AGENTS.—J. R. Geigy, A.-G. (Switzerland, Feb. 10, '37.) 4034.

MANUFACTURE OF STABLE EMULSIONS, ETC.—W. W. Groves (I. G. Farbenindustrie.) 3687.

MANUFACTURE OF OILY, ETC., PRODUCTS.—W. W. Groves (I. G. Farbenindustrie.) 3772.

SILVER HALIDE GELATINE EMULSIONS.—W. W. Groves (I. G. Farbenindustrie.) 4041.

ANTHRAQUINONE COMPOUNDS.—N. H. Haddock, and Imperial Chemical Industries, Ltd. 4093.

MANUFACTURE OF THIAZOLES unsubstituted in the 2-position.—F. Hoffman-La Roche and Co., A.-G. (Switzerland, March 12, '37.) 4077.

REMOVING SALTS FROM WATER.—I. G. Farbenindustrie. (Germany, Feb. 12, '37.) 3773.

MIXING OF SOLID AND LIQUID SUBSTANCES.—I. G. Farbenindustrie. (Germany, Feb. 6, '37.) 3801.

MANUFACTURE OF NITROGENOUS PRODUCTS.—I. G. Farbenindustrie, and G. W. Johnson. 4082.

PRODUCTION OF NITROUS OXIDE.—Imperial Chemical Industries, Ltd. (Du Pont de Nemours and Co.). 4094.

PRODUCTION OF REGENERATED LEATHER.—International Latex Processes, Ltd. (Italy, Feb. 5, '37.) 3668.

MANUFACTURE OF ORGANIC NITROGENOUS COMPOUNDS.—G. W. Johnson (I. G. Farbenindustrie.) 3398.

MANUFACTURE OF AMINO-KETONES.—G. W. Johnson (I. G. Farbenindustrie.) 3400.

MANUFACTURE OF CONDENSATION PRODUCTS.—G. W. Johnson (I. G. Farbenindustrie.) 3591.

MANUFACTURE OF COLOUR LAKES.—G. W. Johnson (I. G. Farbenindustrie.) 3797.

MANUFACTURE OF DIHYDROFURANES.—G. W. Johnson (I. G. Farbenindustrie.) 3798, 3799.

IMPROVEMENT OF ORITICICA OIL.—G. W. Johnson (I. G. Farbenindustrie.) 3800.

PROTECTIVE AGENTS for metallic surfaces.—G. W. Johnson (I. G. Farbenindustrie.) 3939, 3940.

MANUFACTURE OF COLOURED COMPOUNDS.—G. W. Johnson (I. G. Farbenindustrie). 4083.

Specifications Open to Public Inspection

PRODUCTION OF CHEMICALLY-RESISTANT OIL COLOUR PAINTS.—Elektroschmelzwerk Kempton, A.-G. Aug. 13, 1936. 27025/36.

MANUFACTURE OF ELASTIC ARTICLES from polyvinyl alcohols.—H. Vohrer. Aug. 13, 1936. 11008/37.

MANUFACTURE OF ALCOHOLS from olefines.—Standard Alcohol Co. Aug. 12, 1936. 14061/37.

PROCESS FOR THE RECOVERY OF ELEMENTARY SULPHUR from sulphur-dioxide and gases contain same.—Metallges, A.-G. Aug. 10, 1936. 18351/37.

UREA FORMALDEHYDE RESINS.—Resinous Products and Chemical Co. Aug. 13, 1936. 18610/37.

LUBRICATING OF LEATHER.—American Cyanamid and Chemical Corporation. Aug. 8, 1936. 21785/37.

PROCESS OF DISINTEGRATING SUBSTANCES containing cellulose.—W. Darboven (trading as J. W. Darboven.) Aug. 12, 1936. 21851/37.

PROCESS AND APPARATUS FOR HYDROLYSING CELLULOSIC BODIES with hydrogen halides.—E. Neu. Aug. 8, 1936. 21915/37.

MANUFACTURE OF HYDROGENPEROXIDE.—Naamlooze Vennootschap Industrieele Maatschappij Voorheen Noury and Van Der Lande. Aug. 14, 1936. 21915/37.

CONCRETE MIXTURES containing magnesia.—K. Kammuller and R. Scheibe. Aug. 10, 1936. 21946/37.

MANUFACTURE OF AZO DYESTUFFS.—Compagnie Nationale de Matieres Colorantes et Manufactures de Produits Chimiques du Nord Reunies Etablissements Kuhlmann. Aug. 12, 1936. 22153/37.

Specifications Accepted with Dates of Application

MANUFACTURE AND PRODUCTION OF THREADS and fibres of organic thermoplastic materials.—G. W. Johnson (I. G. Farbenindustrie.) Aug. 5, 1936. 479,202.

APPARATUS FOR THE TREATMENT OF ORES by amalgamation.—Anglo-French Securities Corporation, Ltd., and M. Molla. Aug. 23, 1935. 479,449.

PROCESS FOR THE MANUFACTURE OF FLUOROSULPHONIC ACID.—I. G. Farbenindustrie. Aug. 6, 1935. 479,450.

VULCANISATION OF RUBBER.—E. I. du Pont de Nemours and Co. Aug. 8, 1935. 479,451.

MANUFACTURE OF LIGHT-WEIGHT CALCIUM SULPHATE PLASTERS.—V. Lefebure, and Imperial Chemical Industries, Ltd. Aug. 5, 1936. 479,452.

PROCESS FOR THE MANUFACTURE OF TITANIC ACID ESTERS.—A. Carpmael (I. G. Farbenindustrie.) Aug. 7, 1936. 479,470.

PRODUCTION OF VALUABLE HIGHER MOLECULAR ALIPHATIC and/or cyclo-aliphatic compounds.—Naamlooze Vennootschap de Bataafsche Petroleum Maatschappij. Aug. 21, 1935. (Sample furnished.) 479,137.

WASHING-OUT OF WEAK ACIDS from gases.—G. W. Johnson (I. G. Farbenindustrie.) Aug. 11, 1936. 479,301.

PRODUCTION OF SODIUM FLUORIDE SALTS and sodium fluoride double salts.—W. Miersch. Aug. 12, 1936. 479,362.

MANUFACTURE OF DYESTUFFS of the 2-naphthalene-2¹-indolindigo series.—A. Carpmael (I. G. Farbenindustrie.) Aug. 14, 1936. 479,140.

APPARATUS FOR THE CONTINUOUS MANUFACTURE AND PRODUCTION OF POLYMERISATION PRODUCTS of acetylene.—I. G. Farbenindustrie. Sept. 24, 1936. 479,477.

MANUFACTURE OF LEAD ALLOYS.—Goodlass Wall and Lead Industries, Ltd., and B. Jones. Oct. 8, 1936. 479,215.

DE-HUMIDIFYING AIR and other gases.—G. M. Clark (Weiss and Downs, Inc.). Oct. 9, 1936. 479,373.

MANUFACTURE AND PRODUCTION OF WATER-INSOLUBLE ARTIFICIAL MATERIALS from polyvinyl ethers.—G. W. Johnson (I. G. Farbenindustrie.) Oct. 14, 1936. 479,217.

COMPOSITIONS CONTAINING RUBBER, rubber substitutes, and synthetic rubbers.—Standard Oil Development Co. Dec. 13, 1935. 479,478.

APPARATUS FOR THE EXTRACTION, purification, and collection of radium emanation.—T. H. Oddie. Nov. 10, 1936. 479,224.

MANUFACTURE OF WETTING, sudsing, emulsifying and detergent agents.—Proctor and Gamble Co. Jan. 18, 1936. 479,482.

HYDROLYSING CELLULOSE ACETATE.—Kodak, Ltd. Feb. 4, 1936. 479,239.

PRODUCTION OF CONDENSATION PRODUCTS from formaldehyde and urea.—Bakelite, Ges. April 28, 1936. 479,250.

PROCESS FOR THE MANUFACTURE OF ALCOHOLS and derivatives thereof.—Schering-Kahlbaum, A.-G. March 26, 1936. 479,252.

MANUFACTURE OF DIALKOXY SUBSTITUTED GLYCOLS.—Wacker Ges. Fur Elektro-Chemische Industrie Ges., Dr. A. May 9, 1936. 479,253.

WORKING-UP AQUEOUS FORMALDEHYDE SOLUTIONS.—Deutsche Gold-und Silber-Scheideanstalt Vorm. Roessler. May 8, 1936. 479,255.

CASTING OF NON-FERROUS ALLOYS.—Fachanstalt fur Neuzeitliches Giessereiwesen Dipling, Dr. Ing. L. Weiss Ges. Oct. 17, 1936. 479,406.

MANUFACTURE AND PRODUCTION OF AZO COMPOUNDS of high molecular weight.—I.G. Farbenindustrie. May 22, 1936. 479,407.

DEVICE FOR THE DESULPHURISING OF COMBUSTIBLE GASES.—Carbonisation et Charbons Actifs. March 11, 1937. 479,410.

MANUFACTURE OF SULPHONATED COERULEINS.—Durand and Huguenin, A.-G. Sept. 2, 1936. 479,334.

Weekly Prices of British Chemical Products

QUIET conditions continue to prevail in nearly all sections of the chemical market, the volume of spot business being on an exceedingly moderate scale. To some extent the restricted activity is due to a cautious buying policy because so far as contract commitments are concerned deliveries are reported to be going forward with regularity and in fairly substantial quantities. Apart from a reduction in the quotations for glycerine there are no important price changes to record for general chemicals, rubber chemicals and wood distillation products and values are steady with a firm undertone. In the coal tar section all the light hydrocarbon oils are a fraction lower in quotation and further reductions are recorded for crude carbolic and cresylic acids. Naphthalene is also weak on quotation. Actual business in this section remains on a small scale and the market is quiet in tone.

MANCHESTER.—The general position of the Manchester chemical market has shown relatively little change on balance for the week so far as the leading heavy materials are concerned. In some instances traders have again reported a slight decline in the quantities of dyeing and finishing chemicals that are being taken up against contracts in this district, but in most other directions conditions in this respect are reasonably satisfactory. New business since last report has been only on a moderately active scale, but prices generally maintain a steady tone. On the contrary, the price tendency among the by-products has continued easy although further actual changes on balance have been slight. Buying interest in the tar products has again been disappointingly slow, but sellers are hopeful of some measure of improvement before long.

Price Changes

Falls: Glycerine; Benzol, crude, standard motor, 90%, pure; Carbolic Acid, crude 60's, crude (Manchester); Cresylic Acid, 97/99%, 99/100%; Naphthalene, refined (Manchester); Toluol, 90%, pure; Xylol, commercial, pure.

GLASGOW.—Business in general chemicals has continued rather quiet since our last report, both for home trade and export. Prices generally continue quite steady at about previous figures, without any special feature to report.

General Chemicals

ACETONE.—£45 to £47 per ton.

ACETIC ACID.—Tech, 80%, £30 5s. per ton; pure 80%, £32 5s.; tech., 40%, £15 12s. 6d. to £18 12s. 6d.; tech., 60%, £23 10s. to £25 10s. MANCHESTER: 80%, commercial, £30 5s.; tech. glacial, £42 to £46.

ALUM.—Loose lump, £8 7s. 6d. per ton d/d; GLASGOW: Ground, £10 7s. 6d. per ton; lump, £9 17s. 6d.

ALUMINIUM SULPHATE.—£7 2s. 6d. per ton d/d Lancs. GLASGOW: £7 to £8 ex store.

AMMONIA, ANHYDROUS.—Spot, 1s. to 1s. 1d. per lb. d/d in cylinders. SCOTLAND: 10½d. to 1s. 0½d., containers extra and returnable.

AMMONIA, LIQUID.—SCOTLAND: 80°, 2½d. to 3d. per lb., d/d.

AMMONIUM CARBONATE.—£20 per ton d/d in 5 cwt. casks.

AMMONIUM CHLORIDE.—Grey galvanising, £19 per ton, ex wharf.

AMMONIUM CHLORIDE (MURIATE).—SCOTLAND: British dog tooth crystals, £32 to £35 per ton carriage paid according to quantity. (See also Salammoniac.)

AMMONIUM DICHROMATE.—8½d. per lb. d/d U.K.

ANTIMONY OXIDE.—£68 per ton.

ARSENIC.—Continental material £11 per ton c.i.f., U.K. ports; Cornish White, £12 5s. to £12 10s. per ton f.o.r., mines, according to quantity. MANCHESTER: White powdered Cornish, £16 10s. per ton, ex store.

BARIUM CHLORIDE.—£11 10s. to £12 10s. per ton in casks ex store. GLASGOW: £11 10s. per ton.

BLEACHING POWDER.—Spot, 35/37%, £9 15s. per ton in casks, special terms for contracts. SCOTLAND: £9 per ton net ex store.

BORAX COMMERCIAL.—Granulated, £16 per ton; crystal, £17; powdered, £17 10s.; extra finely powdered, £18 10s., packed in 1-cwt. bags, carriage paid home to buyers' premises within the United Kingdom in 1-ton lots. GLASGOW: Granulated, £16, crystal, £17; powdered, £17 10s. per ton in 1-cwt. bags, carriage paid.

BORIC ACID.—Commercial granulated, £28 10s. per ton; crystal, £29 10s.; powdered, £30 10s.; extra finely powdered, £32 10s. in 1-cwt. bags, carriage paid home to buyers' premises within the United Kingdom in 1-ton lots. GLASGOW: Crystals, £29 10s.; powdered, £30 10s. 1-cwt. bags in 1-ton lots.

CALCIUM BISULPHITE.—£6 10s. per ton f.o.r. London.

CHARCOAL, LUMP.—£6 to £6 10s. per ton, ex wharf. Granulated, £7 to £9 per ton according to grade and locality.

CHROMETAN.—Crystals, 2½d. per lb.; liquor, £19 10s. per ton d/d. station in drums. GLASGOW: 70/75% solid, £5 15s. per ton net ex store.

CHROMIC ACID.—9½d. per lb., less 2½%; d/d U.K.

CHROMIUM OXIDE.—11d. per lb.; d/d U.K.

CITRIC ACID.—1s. 0½d. per lb. MANCHESTER: 1s. 0½d. SCOTLAND: B.P. crystals, 1s. 0½d. per lb.; less 5%, ex store.

COPPER SULPHATE.—£21 7s. 6d. per ton, less 2% in casks. MANCHESTER: £19 10s. per ton f.o.b. SCOTLAND: £19 5s. per ton, less 5%, Liverpool, in casks.

CREAM OF TARTAR.—100%, 92s. per cwt., less 2½%. GLASGOW: 99%, £4 12s. per cwt. in 5-cwt. casks.

FORMALDEHYDE.—£20-£22 per ton.

FORMIC ACID.—85%, in carboys, ton lots, £42 to £47 per ton.

GLYCERINE.—Chemically pure, double distilled 1.260 s.g., in tins, £4 12s. 6d. to £5 12s. 6d. per cwt. according to quantity; in drums, £4 5s. 0d. to £4 17s. 6d.

HYDROCHLORIC ACID.—Spot, 5s. 6d. to 8s. carboy d/d according to purity strength and locality.

IODINE.—Resublimed B.P., 6s. 4d. per lb. in 7 lb. lots.

LACTIC ACID.—(Not less than ton lots). Dark tech., 50% by vol., £24 10s. per ton; 50% by weight, £28 10s.; 80% by weight, £50; pale tech., 50% by vol., £28; 50% by weight, £33; 80% by weight, £55; edible, 50%, by vol., £41. One-ton lots ex works, barrels free.

LEAD ACETATE.—LONDON: White, £31 10s. ton lots; brown, £35. GLASGOW: White crystals, £31 10s.; brown, £1 per ton less. MANCHESTER: White, £33; brown, £32.

LEAD, NITRATE.—£32 per ton for 1-ton lots.

LEAD, RED.—£31 15s. 0d. 10 cwt. to 1 ton, less 2½% carriage paid. SCOTLAND: £31 per ton, less 2½% carriage paid for 2-ton lots.

LITHARGE.—SCOTLAND: Ground, £31 per ton, less 2½%, carriage paid for 2-ton lots.

MAGNESITE.—SCOTLAND: Ground calcined, £9 per ton, ex store.

MAGNESIUM CHLORIDE.—SCOTLAND: £7 10s. per ton.

MAGNESIUM SULPHATE.—Commercial, £5 10s. per ton, ex wharf.

MERCURY.—Ammoniated B.P. (white precip.), lump, 5s. 10d. per lb.; powder B.P., 6s. 0d.; bichloride B.P. (corros. sub.) 5s. 1d.; powder B.P. 4s. 9d.; chloride B.P. (calomel), 5s. 10d.; red oxide cryst. (red precip.), 6s. 11d.; levig. 6s. 5d.; yellow oxide B.P. 6s. 3d.; persulphate white B.P.C., 6s. 0d.; sulphide black (hyd. sulph. cum sulph. 50%), 5s. 11d. For quantities under 112 lb., 1d. extra; under 28 lb., 5d. extra.

METHYLATED SPIRIT.—61 O.P. industrial, 1s. 5d. to 2s. per gal.; pyridinised industrial, 1s. 7d. to 2s. 2d.; mineralised, 2s. 6d. to 3s. Spirit 64 O.P. is 1d. more in all cases and the range of prices is according to quantities. SCOTLAND: Industrial 64 O.P., 1s. 9d. to 2s. 4d.

NITRIC ACID.—Spot, £25 to £30 per ton according to strength, quantity and destination.

OXALIC ACID.—£48 15s. to £57 10s. per ton, according to packages and position. GLASGOW: £2 9s. per cwt. in casks. MANCHESTER: £49 to £54 per ton ex store.

PARAFFIN WAX.—SCOTLAND: 3½d. per lb.

POTASH CAUSTIC.—Solid, £35 5s. to £36 15s. per ton for 2-ton lots ex store; broken, £42 per ton. MANCHESTER: £39.

POTASSIUM CHLORATE.—£36 7s. 6d. per ton. GLASGOW: 4½d. per lb. MANCHESTER: £37 10s. per ton.

POTASSIUM DICHROMATE.—5½d. per lb. carriage paid. SCOTLAND: 5½d. per lb., net, carriage paid.

POTASSIUM IODIDE.—B.P. 5s. 6d per lb. in 7 lb. lots.

POTASSIUM NITRATE.—Small granular crystals, £24 to £27 per ton ex store, according to quantity. GLASGOW: Refined granulated, £29 per ton c.i.f. U.K. ports. Spot, £30 per ton ex store.

POTASSIUM PERMANGANATE.—LONDON: 9½d. per lb. SCOTLAND: B.P. Crystals, 9¾d. MANCHESTER: B.P. 11d. to 1s.

POTASSIUM PRUSSIATE.—6½d. per lb. SCOTLAND: 7d. net, in casks, ex store. MANCHESTER: Yellow, 6½d.

SALAMMONIAC.—Firsts lump, spot, £42 17s. 6d. per ton, d/d address in barrels. Dog-tooth crystals, £36 per ton; fine white crystals, £18 per ton, in casks, ex store. GLASGOW: Large crystals, in casks, £37 10s.

SALT CAKE.—Unground, spot, £3 10s. 6d. per ton.

SODA ASH.—58% spot, £5 17s. 6d. per ton f.o.r. in bags.

SODA, CAUSTIC.—Solid. 76/77° spot, £14 per ton d/d station. SCOTLAND: Powdered 98/99%, £18 10s. in drums, £19 5s. in casks. Solid 76/77° £15 12s. 6d. in drums; 70/73%, £15 12s. 6d., carriage paid buyer's station, minimum 4-ton lots; contracts, 10s. per ton less.

SODA CRYSTALS.—Spot, £5 to £5 5s. per ton d/d station or ex depot in 2-cwt. bags.

SODIUM ACETATE.—£19-£20 per ton carriage paid North. GLASGOW: £18 10s. per ton net ex store.

SODIUM BICARBONATE.—Refined spot, £10 15s. per ton d/d station in bags. GLASGOW: £13 5s. per ton in 1 cwt. kegs, £11 5s. per ton in 2-cwt. bags. MANCHESTER: £10 10s.

SODIUM BISULPHITE POWDER.—60/62%, £20 per ton d/d 1 cwt. iron drums for home trade.

SODIUM CARBONATE MONOHYDRATE.—£20 per ton d/d in minimum ton lots in 2 cwt. free bags.

SODIUM CHLORATE.—£27 10s. to £32 per ton. GLASGOW: £1 11s. per cwt., minimum 3 cwt. lots.

SODIUM DICHROMATE.—Crystals cake and powder 4¼d. per lb. net d/d U.K. with rebates for contracts. MANCHESTER:

SODIUM CHROMATE.—4¼d. per lb. d/d U.K.

4d. per lb. GLASGOW: 4¼d. net, carriage paid.

SODIUM HYPOSULPHITE.—Pea crystals, £15 5s. per ton for 2-ton lots; commercial, £11 5s. per ton. MANCHESTER: Commercial, £11; photographic, £15 10s.

SODIUM METASILICATE.—£14 5s. per ton, d/d U.K. in cwt. bags.

SODIUM NITRATE.—Refined, £8 per ton for 6-ton lots d/d. GLASGOW: £1 12s 0d. per cwt. in 1-cwt kegs, net, ex store.

SODIUM NITRITE.—£18 5s. per ton for ton lots.

SODIUM PERBORATE.—10%, 9¼d. per lb. d/d in 1-cwt. drums.

SODIUM PHOSPHATE.—Di-sodium, £12 per ton delivered for ton lots. Tri-sodium, £15 to £16 per ton delivered per ton lots.

SODIUM PRUSSIATE.—...d. per lb. for ton lots. GLASGOW: 5d. to 5¾d ex store. MANCHESTER: 4¼d. to 5d.

SODIUM SILICATE.—£9 10s. per ton.

SODIUM SULPHATE (GLAUBER SALTS).—£3 per ton d/d.

SODIUM SULPHATE (SALT CAKE).—Unground spot, £3 to £3 10s. per ton d/d station in bulk. SCOTLAND: Ground quality, £3 5s. per ton d/d. MANCHESTER: £3 12s. 6d.

SODIUM SULPHIDE.—Solid 60/62%. Spot, £11 15s. per ton d/d in drums; crystals, 30/32%, £9 per ton d/d in casks. MANCHESTER: Concentrated solid, 60/62%, £11; commercial, £8 10s.

SODIUM SULPHITE.—Pea crystals, spot, £14 10s. per ton d/d station in kegs.

SULPHUR PRECIP.—B.P., £55 to £60 per ton according to quantity. Commercial, £50 to £55.

SULPHURIC ACID.—168° Tw., £4 11s. to £5 1s. per ton; 140° Tw., arsenic-free, £3 to £3 10s.; 140° Tw., arsenious, £2 10s.

TARTARIC ACID.—1s. 1¼d. per lb. less 5%, carriage paid for lots of 5 cwt. and upwards. MANCHESTER: 1s. 1¼d. per lb. GLASGOW: 1s. 1d. per lb., 5%, ex store.

ZINC SULPHATE.—Tech., £11 10s. f.o.r., in 2 cwt. bags.

Rubber Chemicals

ANTIMONY SULPHIDE.—Golden, 7d. to 1s. 2d. per lb., according to quality. Crimson, 1s. 6d. to 1s. 7¼d. per lb.

ARSENIC SULPHIDE.—Yellow, 1s. 5d. to 1s. 7d. per lb.

BARYTES.—£6 to £6 10s. per ton, according to quality.

CADMIUM SULPHIDE.—6s. 6d. to 6s. 9d. per lb.

CARBON BLACK.—4d. per lb., ex store.

CARBON DISULPHIDE.—£31 to £33 per ton, according to quantity, drums extra.

CARBON TETRACHLORIDE.—£41 to £46 per ton, according to quantity, drums extra.

CHROMIUM OXIDE.—Green, 10¼d. to 11d. per lb.

DIPHENYLGUANIDINE.—2s. 2d. per lb.

INDIA-RUBBER SUBSTITUTES.—White, 4¼d. to 5¼d. per lb.; dark 4d. to 4¼d. per lb.

LAMP BLACK.—£24 to £26 per ton del., according to quantity. Vegetable black, £35 per ton upwards.

LEAD HYPOSULPHITE.—9d. per lb.

LITHOPONE.—30%, £17 to £17 15s. per ton.

SULPHUR.—£9 to £9 5s. per ton. SULPHUR PRECIP. B.P., £55 to £60 per ton. SULPHUR PRECIP. COMM., £50 to £55 per ton.

SULPHUR CHLORIDE.—5d. to 7d. per lb., according to quantity.

VERMILION.—Pale, or deep, 5s. per lb., 1-cwt. lots.

ZINC SULPHIDE.—£58 to £60 per ton in casks ex store, smaller quantities up to 1s. per lb.

Nitrogen Fertilisers

AMMONIUM SULPHATE.—The following prices have been announced for neutral quality basis 20.6% nitrogen, in 6-ton lots delivered farmer's nearest station up to June 30, 1938: November, £7 8s.; December, £7 9s. 6d.; January, 1938, £7 11s.; February, £7 12s. 6d.; March/June, £7 14s.

CALCIUM CYANAMIDE.—The following prices are for delivery in 5-ton lots, carriage paid to any railway station in Great Britain up to June 30, 1938: November, £7 10s.; December, £7 11s. 3d.; January, 1938, £7 12s. 6d.; February, £7 13s. 9d.; March, £7 15s.; April/June, £7 16s. 3d.

NITRO CHALK.—£7 10s. 6d. per ton up to June 30, 1938.

SODIUM NITRATE.—£8 per ton for delivery up to June 30, 1938.

CONCENTRATED COMPLETE FERTILISERS.—£11 4s. to £11 13s. per ton in 6-ton lots to farmer's nearest station.

AMMONIUM PHOSPHATE FERTILISERS.—£10 19s. 6d. to £14 16s. 6d. per ton in 6-ton lots to farmer's nearest station.

Coal Tar Products

BENZOL.—At works, crude, 9¼d. to 9¾d. per gal.; standard motor, 1s. 2¾d. to 1s. 3¼d.; 90%, 1s. 3¾d. to 1s. 4¼d.; pure, 1s. 7¾d. to 1s. 8¼d. GLASGOW: Crude, 10d. to 10¼d. per gal.; motor, 1s. 4d. to 1s. 4¼d

CARBOLIC ACID.—Crystals, 7¾d. to 8¼d. per lb., small quantities would be dearer; Crude, 60's, 3s. 3d. to 3s. 6d.; dehydrated, 4s. 4¼d. to 4s. 7¾d. per gal. MANCHESTER: Crystals, 8d. per lb. f.o.b. in drums; crude, 3s. to 3s. 6d. per gal.

CREOSOTE.—Home trade, 6¾d. to 6¼d. per gal., f.o.r. makers' works; exports, 6¾d. to 6¾d. per gal., according to grade. MANCHESTER: 4¾d. to 5¼d. GLASGOW: B.S.I. Specification, 6d. to 6¼d. per gal.; washed oil, 5d. to 5¼d.; lower sp. gr. oils, 5¾d. to 6¼d.

CRESYLIC ACID.—97/99%, 3s. to 3s. 3d.; 99/100%, 4s. to 4s. 6d. per gal., according to specification; Pale, 99/100%, 3s. 8¼d. to 3s. 11¼d.; Dark, 95%, 3s. to 3s. 1d. per gal. GLASGOW: Pale, 99/100%, 5s. to 5s. 6d. per gal.; pale, 97/99%, 4s. 6d. to 4s. 10d., dark, 97/99%, 4s. 3d. to 4s. 6d.; high boiling acids, 2s. to 2s. 6d. American specification, 3s. 9d. to 4s. MANCHESTER: Pale, 99/100%, 3s. 3d.

NAPHTHA.—Solvent, 90/160, 1s. 6¼d. to 1s. 7¾d. per gal.; solvent, 95/160%, 1s. 7d. to 1s. 8d., naked at works; heavy 90/190%, 1s. 1¾d. to 1s. 3d. per gal., naked at works, according to quantity. GLASGOW: Crude, 6¾d. to 7¼d. per gal.; 90%, 160, 1s. 5d. to 1s. 6d., 90%, 190, 1s. 1d. to 1s. 3d.

NAPHTHALENE.—Crude, whizzed or hot pressed, £6 10s. to £7 10s. per ton; purified crystals, £15 10s. per ton in 2-cwt. bags. LONDON: Fire lighter quality, £5 10s. to £7 per ton. GLASGOW: Fire lighter, crude, £6 to £7 per ton (bags free). MANCHESTER: Refined, £16 10s. per ton f.o.b.

PITCH.—Medium, soft, 35s. to 37s. per ton, f.o.b. MANCHESTER: 32s. 6d. f.o.b., East Coast. GLASGOW: f.o.b. GLASGOW: 35s. to 37s. per ton; in bulk for home trade, 35s.

PYRIDINE.—90/140%, 13s. 6d. to 15s. per gal.; 90/160%, 10s. to 13s. 3d. per gal.; 90/180%, 3s. 3d. to 4s. per gal. f.o.b. GLASGOW: 90% 140, 10s. to 12s. per gal.; 90% 160, 9s. to 10s.; 90% 180, 2s. 6d. to 3s. MANCHESTER: 12s. 6d. to 14s. per gal.

TOLUOL.—90%, 1s. 9¼d. to 1s. 10¼d. per gal.; pure, 2s. 1¾d. to 2s. 2¼d. GLASGOW: 90%, 120, 1s. 10d. to 2s. 1d. per gal.

XYLOL.—Commercial, 2s. 0¼d. to 2s. 1¾d. per gal.; pure, 2s. 2¼d. to 2s. 3¼d. GLASGOW: Commercial, 2s. to 2s. 1d. per gal.

Wood Distillation Products

CALCIUM ACETATE.—Brown, £7 10s. to £8 per ton; grey, £9 10s. to £10. Liquor, brown, 30° Tw., 6d. to 8d. per gal. MANCHESTER: Brown, £9 10s.; grey, £11 10s.

METHYL ACETONE.—40.50%, £35 to £40 per ton.

WOOD CREOSOTE.—Unrefined, 4d. to 8d. per gal., according to boiling range.

WOOD NAPHTHA, MISCIBLE.—3s. 3d. to 3s. 6d. per gal.; solvent, 3s. 6d. to 3s. 9d. per gal.

WOOD TAR.—£2 to £8 per ton, according to quality.

Intermediates and Dyes

ANILINE OIL.—Spot, 8d. per lb., drums extra, d/d buyer's works.

ANILINE SALTS.—Spot, 8d. per lb. d/d buyer's works, casks free.

BENZIDINE, HCl.—2s. 7¾d. per lb., 100% as base, in casks.

BENZOIC ACID, 1914 B.P. (ex toluol).—1s. 11d. per lb. d/d buyer's works.

m-CRESOL 98/100%.—1s. 8d. to 1s. 9d. per lb. in ton lots.

o-CRESOL 30/31° C.—6¾d. to 7¼d. per lb. in 1-ton lots.

p-CRESOL, 34-5° C.—1s. 7d. to 1s. 8d. per lb. in ton lots.

DICHLORANILINE.—2s. 1¾d. to 2s. 5¾d. per lb.

DIMETHYLANILINE.—Spot, 1s. 7¾d. per lb., package extra.

DINITROBENZENE.—8¼d. per lb.

DINITROCHLORBENZENE, SOLID.—£79 5s. per ton.

DINITROTOLUENE.—48/50° C., 9¼d. per lb.; 66/68° C., 11d.

DIPHENYLAMINE.—Spot, 2s. 2d. per lb., d/d buyer's works.

GAMMA ACID, Spot, 4s. 4¼d. per lb. 100% d/d buyer's works.

H ACID.—Spot, 2s. 7d. per lb.; 100% d/d buyer's works.

NAPHTHIONIC ACID.—1s. 10d. per lb.

β-NAPHTHOL.—£97 per ton; flake, £94 8s. per ton.

α-NAPHTHYLAMINE.—Lumps, 1s. 1d. per lb.

β-NAPHTHYLAMINE.—Spot, 3s. per lb.; d/d buyer's works.

NEVILLE AND WINTHER'S ACID.—Spot, 3s. 3¼d. per lb. 100%.

o-NITRANILINE.—4s. 3¼d. per lb.

m-NITRANILINE.—Spot, 2s. 10d. per lb. d/d buyer's works.

p-NITRANILINE.—Spot, 1s. 10d. to 2s. 3¼d. per lb. d/d buyer's works.

NITROBENZENE.—Spot, 4¼d. to 5d. per lb., in 90-gal. drums, drums extra. 1-ton lots d/d buyer's works.

NITRONAPHTHALENE.—10¼d. per lb.; P.G., 1s. 0¼d. per lb.

SODIUM NAPHTHIONATE.—Spot, 1s. 11d. per lb.; 100% d/d buyer's works.

SULPHANILIC ACID.—Spot, 8¾d. per lb. 100%, d/d buyer's works.

o-TOLUIDINE.—11¼d. per lb., in 8/10-cwt. drums, drums extra.

p-TOLUIDINE.—2s. per lb., in casks.

m-XYLIDINE ACETATE.—4s. 8d. per lb., 100%.

Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for errors that may occur.

Mortgages and Charges

(NOTE.—The Companies Consolidation Act of 1908 provides that every Mortgage or Charge, as described therein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every company shall, in making its Annual Summary, specify the total amount of debt due from the company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case the total debt, as specified in the last available Annual Summary, is also given—marked with an *—followed by the date of the Summary, but such total may have been reduced.)

ALUMINIUM INDUSTRIES, LTD., Lye. (M., 26/2/38.) February 10, £500 (not ex.) mortgage to Lloyds Bank, Ltd., charged on Lion Works, Engine Lane, Lye, etc. *£500. Nov. 5, 1937.

DEASON CHEMICAL CO., LTD., Newcastle-on-Tyne. (M., 26/2/38.) Feb. 9, £350 debentures; general charge. *——. Dec. 31, 1937.

J. C. THOMPSON AND CO. (DURON), LTD., Bradford, manufacturers of textile chemicals. (M., 26/2/38.) Feb. 12, £3,000 debenture and a mortgage collateral thereto, to D. Hamilton, Ilkley; general charge, and charged on Duron Works, 1 and 3 Drummond Road, Bradford.

L. B. HOLLIDAY AND CO., LTD., Huddersfield, chemical manufacturers, etc. (M., 26/2/38.) Feb. 11, £50,000 (not ex.) debenture to Lloyds Bank, Ltd.; general charge. *£247,525. December 7, 1937.

New Companies Registered

The British Chemical Plant Manufacturers' Association, registered February 22 as a company limited by guarantee, without share capital. 337,107.—Each member is liable for 10 guineas in the event of winding up. The word "Limited" is omitted from the title by licence of the Board of Trade. The objects are to take over the property, effects and liabilities of the British Chemical Plant Manufacturers' Association; to foster the manufacture of British chemical plant, and to promote closer co-operation between manufacturers of such plant and the interchange of information amongst such manufacturers; and to co-operate with a view to providing that as far as practicable British chemicals shall be made with Brtish plant, etc. The subscribers are:—

John H. G. Monypenny, F.Inst.P., Brown Bayley's Steel Works, Ltd., Leeds Road, Sheffield.

William S. Knight, director and secretary of Kestner Evaporator and Engineering Co., Ltd., 5 Grosvenor Gardens, S.W.1.

William Russell, M.I.M.M., chairman of Dorr-Oliver and Co., Ltd., Abford House, Wilton Road, S.W.1.

Dr. Geoffrey E. Foxwell, D.Sc.(Lond.), F.Inst.P., etc., of Clayton, Son and Co., Ltd., Moor End Works, Hunslet, Leeds.

John C. Haithwaite, of John Thompson (Dudley), Ltd., Windmill Works, Dudley, Worcs.

James W. Wright, manager of chemical plant department of Cannon Iron Foundries, Ltd., Deepfields, near Bilston, Staffs.

H. J. Bush, M.Sc., Ph.D., director of Huntingdon, Heberlein and Co., Ltd., Bush House, Aldwych, W.C.2.

Rudolf Lessing, Ph.D., F.I.C., etc., director of the Hydronyl Syndicate, Ltd., 50 Queen Anne's Gate, S.W.1.

Richard Seligman, Ph.Nat.D., F.I.M., etc., chairman and managing director of the Aluminium Plant and Vessel Co., Ltd., Point Pleasant, Wandsworth, S.W.18.

Arthur J. S. Hooton, managing director of S. H. Johnson and Co., Ltd., Engineering Works, Carpenters Road, Stratford, E.15.

The management is vested in an executive committee, the first members of which are John H. Gill Monypenny (chairman), William Russll (vice-chairman), William S. Knight (honorary treasurer), Brian L. Broadbent, Dr. Geoffrey E. Foxwell, Arthur J. S. Hooton, Dr. Rudolf Lessing, Sydney J. Ralph and James W. Knight. Secretary: J. D. Pratt. Solicitors: Brash, Wheeler and Co., 16 Paternoster Row, E.C.4. The registered office is at 166 Piccadilly, W.1.

Liquid Gas Co. (Norfolk), Ltd. 336,767.—Private company. Capital, £500 in £1 shares. To carry on business as manufacturers of and dealers in liquid and other gases, chemicals, disinfectants, fertilisers, salts, acids, oils, etc. Directors. Robert T. Moore, Sunnydene, Hoveton St. John; Robert F. Moore, Ralph Moore.

John Davies and Co. (Chemists), Ltd. 336,733.—Private company. Capital, £100 in 100 shares of £1 each. To carry on the business of manufacturing, pharmaceutical, analytical, photographic and dispensing chemists and druggists, etc. Directors: Joseph Broadhead, 68 Lower Clapton Road, E.5; Stanley F. N. Davies, John H. Broadhead, Alice L. J. Davies.

Forthcoming Events

February 21.-March 4.—British Industries Fair at Olympia and Earl's Court, London, and Castle Bromwich, Birmingham.

March 6-14.—Leipzig Fair.

London.

February 28.—Royal Society of Arts. John Street, Adelphi, W.C.2. 5 p.m. J. F. Danielli, "Surface Chemistry and Biology." 8 p.m. (Cantor Lecture) Colin J. Smithells, "Gases and Metals." (Lecture I). University College, Gower Street, W.C.1.

March 1.—Institute of Chemistry. 30 Russell Square, W.C.1. Annual General Meeting. 8 p.m. Sir Robert Pickard, "Some Considerations Affecting the Policy of the Institute."

March 2.—Society of Public Analysts. Burlington House, Piccadilly, W.1. 8 p.m. Ordinary Meeting.

Royal Society of Arts. John Street, Adelphi, W.C.2. 8.15 p.m. E. V. Evans, "Coal Carbonisation and its Importance in the Life of the Nation."

Association of Scientific Workers. University College, W.C.1. 8.15 p.m. Major F. A. Freeth, "Science in the Chemical Industry."

March 3.—The Chemical Society. Burlington House, Piccadilly, W.1. 8 p.m. Ordinary Scientific Meeting.

Royal Institution of Great Britain. 21 Albemarle Road, W.1. 5.15 p.m. Dr. H. W. Melville, "The Mechanism of Gaseous Chemical Reactions."

March 4.—Society of Public Analysts. 30 Russell Square, W.C.1. 3 p.m. Annual General Meeting. 7 p.m. Dinner. Royal Palace Hotel, High Street, Kensington, W.8.

March 5.—British Association of Chemists. London Section. Annual Dinner. Waldorf Hotel, Aldwych, W.C.2.

March 7.—Society of Chemical Industry. Burlington House, Piccadilly, W.1. 8 p.m. Dr. G. Malcolm Dyson, "The Scientific Basis of Odour."

Royal Society of Arts. John Street, Adelphi, W.C.2. 8 p.m. (Cantor Lecture) Colin J. Smithells, "Gases and Metals" (Lecture II).

University College, Gower Street, W.C.1. 5 p.m. Dr. J. F. Danielli, "Surface Chemistry and Biology."

March 8.—The Institution of Chemical Engineers and the Institution of Electrical Engineers. Savoy Place, Victoria Embankment, W.C.2. 6 p.m. J. O. Samuel, "The Theoretical and Commercial Aspects of Flocculation."

The Pharmaceutical Society of Great Britain. 17 Bloomsbury Square, W.C.1. 8.30 p.m. F. W. Gamble, Harrison Memorial Lecture.

Royal Institution of Great Britain, 21 Albemarle Road, W.1. 5.15 p.m. Dr. F. A. Paneth, "Helium as a Clue to the History of the Earth."

March 9.—Electrodepositors' Technical Society. Northampton Polytechnic Institute, St. John Street, E.C.1. 8.15 p.m. R. D. Brown, "Copper Refining."

Association of Scientific Workers, University College, W.C.1. 8.15 p.m. Dr. E. A. Rudge, "Training Chemists for Industry."

Birmingham.

March 4.—Society of Chemical Industry. Joint Meeting with the Chemical Engineering Group and Coventry Engineering Society. Chamber of Commerce Buildings, New Street. 6.45 p.m. Dr. P. H. Nettman, "The Mechanism of Adhesion between Metals and Protective Paint Coatings."

March 9.—Institution of the Rubber Industry (Midland Section). James Watt Memorial Institute, Great Charles Street. H. W. Rowell, "Material Specifications and Specification Tests."

Bristol.

March 3.—Society of Chemical Industry. University, Woodland Road. 7.30 p.m. Annual Meeting. Dr. E. B. Maxted, "Catalysis and its Applications in Industry."

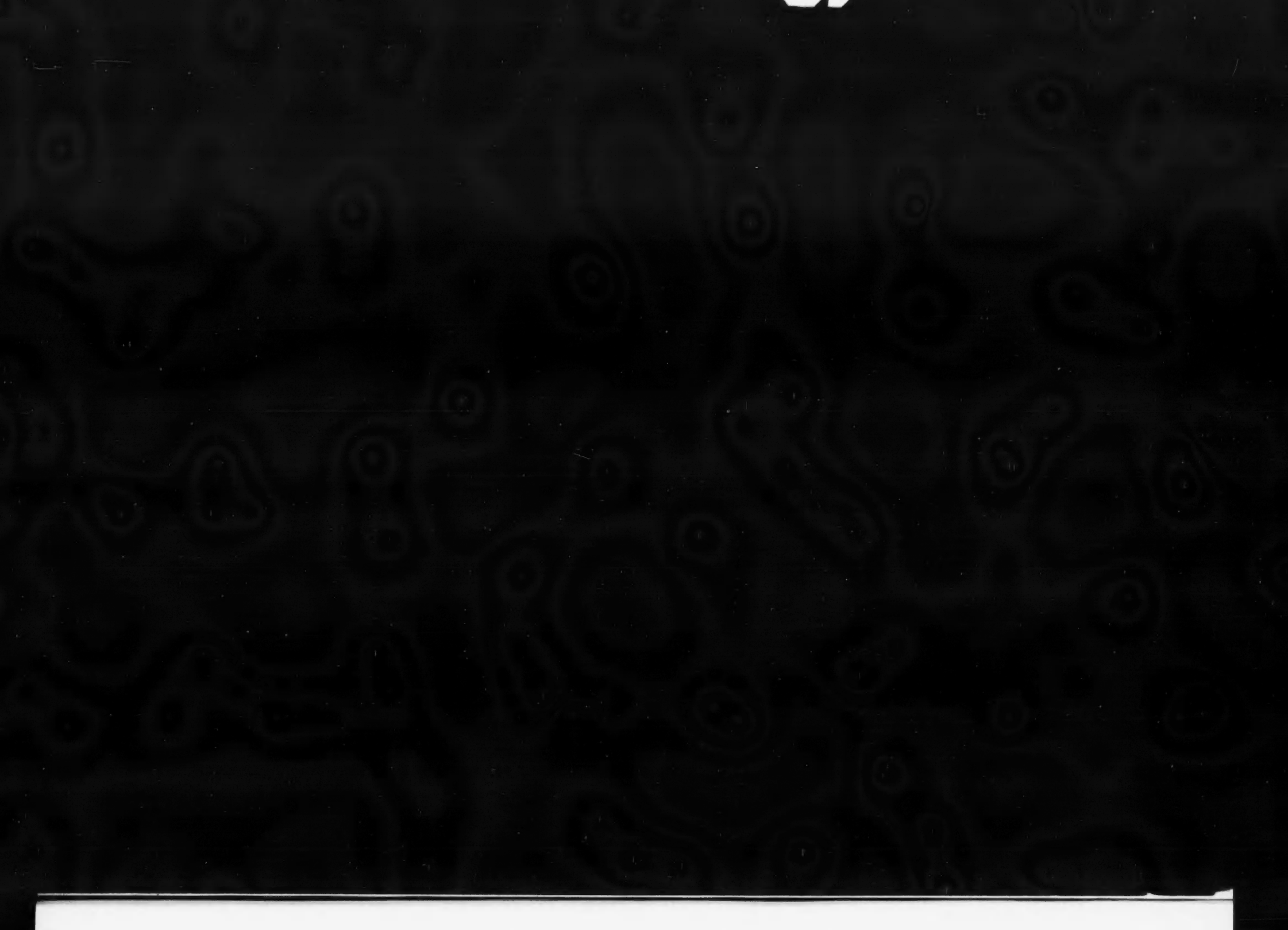
Glasgow.

March 4.—Society of Chemical Industry. Annual Meeting of the Glasgow Section. 7.45 p.m. Chairman's Address, Dr. I. Vance Hopper.

Hull.

March 1.—Hull Chemical and Engineering Society. Hull Photographic Society's Room, Grey Street, Park Street. 7.45 p.m. E. L. Holmes, "New Processes in Water Treatment."

Leeds.

March 5.—International Society of Leather Trades' Chemists (British Section) Leeds University. 10 a.m. Dr. J. B. Speakman, "The Action of Light on Animal Fibres with special reference to the Dyeing of Sheepskins and Furs," Dr. R. H. Marriott, "A Simple Method of Determining the Birefringence of Animal Fibres."

March 7.—Society of Chemical Industry (Plastics Group and Yorkshire Section) University. 7.15 p.m. Dr. F. W. Skirrow, "Vinyl Esters, their Origin, Transformation and Place in the Plastics Field."